INTERIM RECORD OF DECISION

SAN GABRIEL VALLEY SUPERFUND SITE
PUENTE VALLEY OPERABLE UNIT
CITY OF INDUSTRY, CALIFORNIA

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This Interim Record of Decision (ROD) addresses the contamination at the Puente Valley Operable Unit (PVOU) located within the San Gabriel Valley Superfund Site in Los Angeles County, California.

Statement of Basis and Purpose

This ROD presents the selected interim remedial action for the PVOU of the San Gabriel Valley Superfund Site in accordance with the Comprehensive Environmental Response, Compensation and Liability Act of 1980, 42 U.S.C. §§ 9601 et. seq., as amended by the Superfund Amendments and Reauthorization Act of 1986 (SARA) (collectively referred to herein as CERCLA) and to the extent practicable, the National Oil and Hazardous Substances Pollution Contingency Plan, 40 CFR Part 300 (NCP). This decision is based on the Administrative Record for this site.

The State of California, acting through the California Department of Toxic Substances Control (DTSC) and the Los Angeles Regional Water Quality Control Board (RWQCB), concur with the selected remedy.

Assessment of the Site

The response action selected in this ROD is necessary to protect the public health or welfare or the environment from actual or threatened releases of hazardous substances into the environment.

Description of the Interim Action

This ROD addresses ground water contaminated with volatile organic compounds (VOCs). EPA's objective is to protect human health and the environment. The selected remedy is containment of ground water contaminated with VOCs in the shallow and intermediate zones at the mouth of Puente Valley to prevent further migration of existing ground-water contamination. This remedy includes performance criteria that will require extraction and treatment of contaminated ground water at certain locations along the downgradient edge of the contamination and will require continued monitoring and evaluation at other locations. Treated ground water will be provided to local water purveyors or discharged to Puente Creek, immediately upstream of San Jose Creek. In addition, this remedy includes monitoring in the shallow, intermediate, and deep ground-water zones at mid-valley and at the mouth of the valley.

Statutory Determinations

The selected remedy is protective of human health and the environment, complies with federal and state requirements that are legally applicable or relevant and appropriate to the remedial action and is cost effective. Performance criteria and remediation components of the selected remedy satisfy the statutory preference for remedies that employ treatment that reduces toxicity, mobility, or volume as a principal element.

Because this remedy will result in hazardous substances remaining onsite above health-based levels, a review will be conducted at least once every five years after commencement of remedial action to ensure that the remedy continues to provide adequate protection of human health and the environment.

_____ _____

Keith A. Takata
Director of Superfund Division
U.S. Environmental Protection Agency, Region IX

Date

Part I Decision Summary

1 Site Location and Description

1.1 Location and Topography

This interim Record of Decision (ROD) covers the Puente Valley Operable Unit (PVOU) located within the southeastern portion of the San Gabriel Valley (Figure 1), approximately 25 miles from the Pacific coast, in eastern Los Angeles County. Located within the San Gabriel Valley is the San Gabriel Basin, a broad piedmont plain that slopes gradually to the southwest at a gradient of approximately 65 feet per mile (CDWR, 1934). This structural basin is a natural ground-water reservoir that collects rainfall on the valley floor and run-off from the surrounding highlands, recharging the ground-water aquifer.

The San Gabriel Basin is bounded to the southwest, south, and southeast by a crescent-shaped system of low hills. The hills making up the system, from west to east, are the Repetto, Merced, Puente, and San Jose Hills. The only significant break along this boundary falls between the Merced and Puente Hills at Whittier Narrows. Whittier Narrows is the lowest point in the San Gabriel Valley and is the exit for the San Gabriel River and Rio Hondo and their tributaries, which serve as the drainage system for the valley.

The Puente Valley is a "horn-shaped" valley with a mouth that opens into the Main San Gabriel Ground-Water Basin at the west (CDWR, 1934). It covers a surface area of 10,900 acres, and is approximately 12-1/2 miles long and ranges from less than 2 miles wide at the eastern end to over 3 miles wide at the western end. Puente Valley varies in elevation from over 800 feet above mean sea level (msl) at the eastern boundary to approximately 300 feet msl at the western boundary. Puente Valley is bounded on the north by the San Jose Hills and on the south by the Puente Hills.

The surface geology in the Puente Valley is a mixture of stream channel deposits from San Jose Creek, consisting of clay, silt, sand, and minor amounts of gravel (EPA, 1993c). The creek, a tributary to the San Gabriel River, flows through the center of the valley and serves as the major surface water drainage in the area.

The eastern boundary of the PVOU coincides with the boundary of the San Gabriel Valley at the eastern end of Puente Valley. The western boundary of the PVOU extends beyond the end of the Puente Valley into the Main San Gabriel Valley, and incorporates production wells located north and west of the Puente Valley (EPA, 1993c).

The PVOU spans portions of both the Puente Ground-Water Basin and the Main San Gabriel Ground-Water Basin. Although there is no exact dividing line between these basins, the general boundaries are described in the Puente Narrows Agreement, dated May 8, 1972, between the Puente Basin Water Agency and the Upper San Gabriel Valley Municipal Water District. The general area of division between the basins is the Puente Narrows, which is

defined in the Puente Narrows Agreement as "The subsurface geologic constriction at the downstream boundary of Puente Basin."

1.2 Climate

The region in which Puente Valley is located has a Mediterranean climate. Like most of the South Coastal Basin, intermittent rain occurs during the winter; and summers are predominantly dry. The mean seasonal temperature of the Puente Valley varies from the upper 50 degrees Fahrenheit (°F) range in the winter to the mid 80°F range in the summer. The average annual temperature is 62°F. Temperatures rarely drop below freezing; however, in the San Gabriel Valley, values have been recorded as low as 22°F and as high as 111°F (CDWR, 1966).

The prevailing wind direction is from the south to southwest. During the fall and winter months, however, Santa Ana wind conditions, unique to Southern California, are known to occasionally affect the local weather, increasing temperatures and bringing warm dry air from the northeast (James M. Montgomery, 1992).

All precipitation in the Puente Valley occurs as rainfall. Based on information presented in the Ninth Annual Report (Puente Basin Watermaster, 1995), the average annual rainfall for the Puente Valley is approximately 18 inches per year, with approximately 77 percent of the precipitation occurring between December and March. Within the valley, precipitation levels vary slightly, mainly as a result of differences in ground surface elevation. Precipitation levels in the valley are known to fluctuate significantly from year to year, creating periods of above-normal rainfall levels interspersed with periods of persistent drought.

1.3 Land Use

The majority of the Puente Valley is highly industrialized and is occupied by the City of Industry, an incorporated city that covers approximately 11 square miles. According to information provided by the City of Industry (City of Industry, 1995), 96 percent of the city is zoned for industrial uses; and 4 percent is zoned for commercial purposes. Nearly 85 percent of the land within the boundaries of the City of Industry has been developed, and accommodates approximately 1,700 businesses. Currently, the City of Industry is planning to develop an additional 1,500 acres, all zoned for industrial and commercial uses. The small amount of land within the City of Industry allotted for residential purposes is occupied by 631 residents (City of Industry, 1995). The Cities of La Puente and Walnut also occupy portions of the Puente Valley at the northwestern and eastern borders, respectively. The portions of the PVOU occupied by these cities are zoned primarily for residential purposes. Prior to the early 1950s, Puente Valley was primarily used for agricultural purposes.

1.4 Surface Water

Two major stream systems carry surface flow from the San Gabriel Valley: the San Gabriel River and the Rio Hondo and their tributaries. The headwaters for these two systems are in

the San Gabriel Mountains. The systems transverse the San Gabriel Valley in a southwesterly direction and exit the valley at Whittier Narrows (EPA, 1993c). Except in the case of significant storms, these channels do not carry much natural run-off (EPA, 1993c).

Nearly all of the stream channels contributing to the drainage of the San Gabriel Valley have been modified with the addition of concrete lining. This lining minimizes recharge of the aquifer by surface water flow, except in portions of the San Gabriel River that are not lined and are intended as areas for ground-water recharge. In addition, the major channels have been supplemented with flood control reservoirs.

The majority of the flow within the San Gabriel River is contributed by run-off draining from the San Gabriel Mountains, directly into the river (California Department of Water Resources [CDWR], 1966). A portion of the flow, however, is contributed by the Walnut and San Jose Creeks and by the tributaries of the Raymond Basin (to the northwest of the San Gabriel Valley).

San Jose Creek, a tributary of the San Gabriel River, is the only surface water feature within the PVOU with continuous flow. Continuous surface water flows in San Jose Creek are sustained by discharge from the Pomona Valley Treatment Plant, industrial wastewater discharge, treated ground-water discharge from one industrial facility, and intermittent ground water discharging through weepholes.

Most of the stretch of San Jose Creek that runs through the PVOU is concrete lined. However, near the western boundary of the PVOU, the last approximate 1-1/3 miles of the channel are unlined. The lined portion of the channel is underlain by a subdrain system consisting of a series of longitudinal perforated collector pipes embedded in a coarse drain material, which is underlain by a shallow layer of filter material. The subdrain collector pipes are designed to relieve hydrostatic pressure from building up under the concrete channel, by allowing shallow ground water from beneath the channel to flow into the surface water channel either through weep holes or discharge pipes in the channel walls.

A portion of the surface water flow in San Jose Creek is allowed to recharge ground water, both in unlined reaches of the San Jose Creek and San Gabriel River and in the San Gabriel River Spreading Grounds. These spreading grounds are located in the Central Basin, along the San Gabriel River, downstream of where San Jose Creek feeds into the river.

1.5 Geology and Hydrogeology

1.5.1 San Gabriel Valley/Basin

The Main San Gabriel Basin is filled with alluvial deposits, primarily of Quaternary age, which overlie relatively impermeable rock. These deposits are 2,000 to 4,000 feet thick over the center of the basin and range between approximately 250 to 800 feet thick at the basin outlet in Whittier Narrows. The distribution of the sediments deposited in the basin is controlled both by the distance from the sediment source and by the position relative to river and tributary courses. Across the Main San Gabriel Basin, the alluvial deposits show a high degree of variability in sediment type, both vertically and laterally (EPA, 1993c).

There are three general water-bearing formations of the Main San Gabriel Basin. The Upper Pico Formation is a Pliocene marine deposit, while the Older and Recent Alluvium are nonmarine sediments of Recent and Pleistocene age (CDWR, 1966). The Upper Pico Formation is a semiconsolidated marine deposit, consisting mainly of sand, silt, and clay interbedded with gravels. In the vicinity of Whittier Narrows, the formation is water bearing. Where it crops out in the Repetto, Merced, and Puente Hills, however, it contains little or no water (CDWR, 1966).

Older Alluvium refers to those alluvial deposits that were lain down during the late and possibly early Pleistocene period. It tends to occur as unsorted debris, yellowish to reddish brown in color. Grain sizes range from fine silt to boulders over 2 feet in diameter. In the Main San Gabriel Basin, most of the subsurface sediment is made up of Older Alluvium (CDWR, 1966).

Recent Alluvium tends to be light-gray to buff in color and is made up of a range of coarser materials: boulders, gravels, and sands. Because of its coarse nature, Recent Alluvium is efficient in the absorption, transmission, and yielding of water.

Major structural features controlling regional ground-water flow in the San Gabriel Basin include the topographic highs (i.e., San Gabriel Mountains and southern hills) and topographic lows (i.e., San Gabriel Basin and subbasins). Four major faults in the San Gabriel Basin potentially impact ground-water flow: the Sierra Madre Fault System, the Raymond Fault, the Lone Hill-Way Hill Fault, and the Workman Hill Fault. As discussed in the Feasibility Study (FS), other faults (i.e., Walnut Creek Fault and Handorf Fault) also appear to exert some influence on ground-water movement in the San Gabriel Basin.

1.5.1.1 Puente Valley/Basin

Puente Valley is bounded on the north by the San Jose Hills and on the south by the Puente Hills. The San Jose Hills and Puente Hills are composed primarily of marine sedimentary rocks ranging from Pliocene to Miocene age (1.6 to 23.4 million years). Material derived from these hills has contributed a large portion of the alluvium in the Puente Valley.

The materials making up the Puente and San Jose Hills have reported hydraulic conductivities generally two orders of magnitude less than the alluvial deposits filling the Puente Valley. The deposits filling Puente Valley are derived from the Puente and San Jose Hills and consist of alluvium interbedded with other deposits. The fill deposits range in thickness from approximately 1,300 feet in the northwestern portion of the PVOU to less than 25 feet thick in the extreme eastern portion and valley perimeter. They consist, to a large extent, of clay and silty clay with lenses of sand and gravel. Some of these permeable lenses have been shown to persist throughout much of the valley.

The alluvial deposits filling Puente Valley were derived from two primary sources: materials derived locally from the San Jose Hills to the north and Puente Hills to the south (Older Alluvium), and Recent Alluvium deposited by San Jose Creek (CDWR, 1934). Older Alluvium is exposed over much of the periphery of the Puente Valley, with fingers of Recent Alluvium exposed up the center of the valley into the eastern extremities. The Older Alluvium consists of debris ranging in size from fine silt to medium boulders, derived primarily from the surrounding hills.

The Puente Formation underlies the alluvium and is considered to be relatively nonwater-bearing bedrock. This bedrock forms a somewhat irregular basement in the valley and, in places, protrudes through the alluvium, creating isolated outcrops of bedrock within the basin (CDWR, 1966).

1.5.2 Hydrogeology

According to the CDWR report (1966), the Main San Gabriel Ground-Water Basin comprises approximately 167 square miles of water-bearing valley land. The maximum depth of alluvial fill within the main basin is unknown, though it is expected to be between 2,000 and 4,000 feet (CDWR, 1934; and EPA, 1993c). The estimated total storage capacity of the Main San Gabriel Basin is 10.44 million acre-feet (CDWR, 1979); however, because of the great depth of the basin and the subsequent inaccessibility of much of the ground water, the available supply of the basin is much less.

The majority of natural inflow to the Main San Gabriel Basin is in the form of surface water, originating as precipitation and entering through stream channels or as overland flow. Subsurface flow crosses into the San Gabriel Valley from the Raymond Ground-Water Basin across the Raymond fault on the northwest, and from the Chino Ground-Water Basin on the east.

The total water available to the Puente Basin is supplied primarily by precipitation on the valley floor and adjacent watershed, and by underflow from surrounding areas. Currently, water is also being imported into the Puente Basin from the Pomona Water Reclamation Plant and from the Metropolitan Water District of Southern California (Metropolitan) by the Rowland and Walnut Water Districts (Puente Basin Watermaster, 1995).

Because the Puente Basin is constrained on the north and south by bedrock outcrops, ground water generally flows toward the west and northwest. Evaluation of ground-water elevation data collected in February 1996 indicates that the horizontal hydraulic gradient for the area east of Azusa Avenue ranges from 0.015 to 0.033. In the mid-valley area, the horizontal gradient ranges from 0.004 to 0.007. Gradients in the mouth of the valley (i.e., northwest of Hacienda Boulevard) range from 0.006 to 0.010. Ground-water flow velocity in the PVOU has been reported to range between 0.6 foot / day and 3.7 feet / day and may be somewhat higher near the area of pumpage at the mouth of the valley. Flow velocity is directly influenced by the horizontal gradient. Therefore, flow velocities are relatively higher in areas of higher horizontal gradient (EPA, 1993c).

1.6 Ground-water Management

Administratively, two ground-water basins exist within the PVOU: the Puente Basin and the Main San Gabriel Basin. The complete Puente Basin and southeast tip of the Main San Gabriel Basin are located within the PVOU. The rights to pump ground water from these basins are adjudicated (i.e., assigned to specified users in accordance with a court judgment).

Water rights in the Main San Gabriel Basin were adjudicated in a stipulated judgment by the Superior Court of Los Angeles County in 1972 (amended in 1989), in the case, *Upper San Gabriel Valley Municipal Water District v. City of Alhambra* (Case Number 924128). This

adjudication resulted in assigning water rights to approximately 50 parties that each hold rights to greater than one percent of the natural safe yield of the basin (152,700 acre-feet per year, established in the judgment), and approximately 100 parties that each hold rights to less than 1 percent of the natural safe yield.

The judgment also establishes the duties of a Watermaster, which include annually determining an operating safe yield for the basin, monitoring pumpers' compliance with the judgment, issuing permits for all new and increased pumping in the basin, and preparing an annual report that includes details of pumping activities in the basin. The amount of ground water that each water rights holder can pump in any year is adjusted by prorating the pumper's prescriptive rights (percentage of natural safe yield) by the operating safe yield, as established by the Watermaster.

The majority of the ground water pumped from the Main San Gabriel Basin is used for drinking water, supplied to the public by purveyors that are regulated as public water supply systems. Annually, pumping typically equals or exceeds the operating safe yield of the basin. When excess extraction occurs, the judgment has established provisions for assessing pumpers the cost of importing water to replenish the excess amount extracted.

The water rights in the Puente Basin were adjudicated in a stipulated judgment by the Superior Court of Los Angeles County in 1986, in the case, *Puente Basin Water Agency, et al., v. City of Industry, et al.* (Case Number C369220). This adjudication resulted in assigning water rights to five primary producers in the basin. As with the Main San Gabriel Basin, the Puente Basin judgment established the duties of a Watermaster, which are similar in nature to the Main San Gabriel Basin Watermaster.

2 Site History

2.1 Overview of Site Activities

The San Gabriel Valley has been the subject of environmental investigation since 1979 when ground water contaminated with volatile organic compounds (VOCs) was first identified. In May 1984, four broad areas of contamination within the basin were listed as San Gabriel Areas 1 through 4 on the Environmental Protection Agency's (EPA's) National Priorities List (NPL). EPA subsequently divided the basin into eight operable units (OUs) to provide a means of describing hydrogeology and contaminant distribution, and planning remedial activities in the basin.

In 1986, data were compiled and reviewed to develop a preliminary conceptual hydrogeologic model of the San Gabriel Valley, as described in the Supplemental Sampling Program (SSP) Report (EPA, 1986). The results of the SSP investigations provided much of the basis for planning the remedial investigations that have been performed in the San Gabriel Valley since 1986. The Interim San Gabriel Basin Remedial Investigation Report (EPA, 1992b) describes these investigations and incorporates their results into an integrated discussion of EPA's understanding of hydrogeologic conditions in the basin.

In April 1993, EPA issued a draft Statement of Work (SOW) for an Interim remedial investigation/feasibility study (RI/FS) to address the PVOU. Following negotiations between EPA and the Puente Valley Steering Committee (PVSC), an Administrative Order on Consent (AOC) was executed in which the PVSC agreed to perform the investigation detailed in the current SOW, which is a part of the AOC.

2.2 Remedial Investigation Activities

EPA developed the RI/FS process for conducting environmental investigations under Superfund. The RI/FS approach is the methodology that the Superfund program has established for characterizing the nature and extent of risks posed by uncontrolled hazardous waste sites to evaluate potential remedial options.

The RI serves as a mechanism to collect data for site characterization. The FS serves as the mechanism for development, screening, and evaluation of potential remedial alternatives. The goals of the RI/FS did not include identifying or evaluating soil and soil gas contamination, or developing alternatives for remedial action to address shallow ground-water contamination that should be addressed through parcel- or source-specific actions (CDM, 1993). Intrinsic to the adopted approach was the assumption that parcel- or source-specific actions will continue to be taken under the purview of the Los Angeles Regional Water Quality Control Board (RWQCB). Existing data indicate that source control actions under the purview of the RWQCB have a significant beneficial effect on water quality in the shallow zone.

The goals[1] of the RI/FS process for the PVOU were to:

- Assess the nature and extent of ground-water contamination in the PVOU to support an EPA decision on one or more interim actions, which may include a ground-water contamination migration control action in the northwestern Puente Valley.
- Assess water quality in the San Jose Creek channel and subdrain during ground-water discharge conditions to assess the potential for increased contaminant migration in the channel and subdrain system, and to evaluate the exposure risk associated with such migration.
- Develop, screen, and analyze alternatives for appropriate remedial action(s) to manage the vertical and horizontal migration of regional contaminated ground water from highly contaminated to less contaminated (i.e., an order of magnitude less) portions of the PVOU. Such remedial action(s) will focus on contaminated regional ground water that is not being managed within the boundary of a specific parcel of property through parcel-specific response.

An Interim Remedial Investigation was conducted for the PVOU during the period September 1994 through February 1996. As detailed in the Interim RI/FS SOW and Work Plan, the Interim RI consisted of two primary components, a ground-water investigation of the PVOU and a surface water/ground-water interaction investigation of San Jose Creek. The final RI Report was submitted to EPA in May 1997.

An FS was performed for the PVOU in 1996 and 1997. The FS identified remedial action objectives, assembled remedial alternatives, and provided an evaluation of the alternatives versus nine evaluation criteria that EPA established. EPA issued the Final FS Report in May 1997.

[1]The "goals" stated in the SOW and Work Plan were used to identify the scope of the PVOU RI/FS. They should not be confused with "remediation goals" developed under the NCP.

3 Enforcement Activities

EPA began its enforcement efforts in the PVOU in 1985 by searching historical federal, state, and local records for evidence of chemical usage, handling, and disposal in the Puente Valley area. At approximately the same time, the RWQCB initiated its Well Investigation Program (WIP) to identify sources of ground-water contamination. In 1989, EPA entered into a cooperative agreement with the RWQCB to expand the WIP program, to assist EPA in determining the nature and extent of the sources of ground-water contamination in the San Gabriel Valley, and to identify responsible parties. The RWQCB directly oversees facility-specific investigations in the Puente Valley area; EPA helps fund these activities and, when necessary, uses its enforcement authority to obtain information and ensure that facility investigations are promptly completed.

As of September 1998, the RWQCB has sent chemical use questionnaires to approximately 730 facilities in the Puente Valley area; inspected approximately 650 of these facilities; and directed approximately 190 facilities to perform soil, soil gas, and/or ground-water investigations. EPA has concurrently used its authority under Section 104(e) of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) to request information from more than 150 current and former owners and operators in the PVOU. From these investigations, EPA has identified 50 facilities as sources of ground-water contamination for the PVOU.

From 1990 through 1993, EPA sent General Notice of Liability letters to approximately 109 entities in and around the Puente Valley area. On May 26, 1993, EPA sent Special Notice letters to 58 potentially responsible parties (PRPs), requesting that these parties present a good faith offer to perform the RI/FS for the PVOU. Forty-two of these PRPs formed the PVSC and in September 1993 entered into an AOC with EPA to conduct the RI/FS. Also in September 1993, EPA issued a Unilateral Administrative Order (UAO) to two PRPs, Goe Engineering and Diversey Corporation, that failed to present a good faith offer. Diversey Corporation completed the activities that the UAO required in 1996, and the PVSC and EPA completed the RI/FS in May 1997.

Since 1993, EPA and the RWQCB have continued to investigate potential sources of contamination. In June 1997, EPA notified 11 additional entities that they had been identified as PRPs. EPA is now in the process of identifying a final group of PRPs for the PVOU. EPA will contact the new PRPs shortly after the ROD is issued. EPA anticipates issuing Special Notice letters to the Puente Valley PRPs a few months after all of the PRPs have been identified; however, EPA may offer to settle with some of the smaller PRPs in lieu of issuing Special Notice letters.

EPA and the RWQCB have undertaken enforcement activities elsewhere in the San Gabriel Valley, including facility investigations, issuance of CERCLA section 104(e) requests for information, issuance of General and Special Notice letters, and filing of cost recovery litigation. PRPs in the El Monte and South El Monte OUs have entered into Administrative Consent Orders to perform the RI/FS for their respective OUs. EPA also issued UAOs to two parties in the El Monte OU. In the Baldwin Park OU, EPA issued a ROD in March 1993,

and in May 1997 sent Special Notice letters to 19 PRPs seeking performance of the remedial design and remedial action (RD/RA). Soon thereafter, perchlorate contamination was discovered in the Baldwin Park OU, leading EPA to initiate an amendment of the ROD and extend the deadline for the submission of a good faith offer to July 1999.

4 Scope and Role of this Document

There are four areas of ground-water contamination in the San Gabriel Basin aquifer listed on the NPL as San Gabriel Valley Areas 1 through 4. The San Gabriel Valley has been divided into eight different OUs: Alhambra, Baldwin Park, El Monte, South El Monte, Whittier Narrows, Suburban, Richwood, and Puente Valley (Figure 1). The PVOU addresses ground-water contamination corresponding to the San Gabriel Valley Area 4 NPL site.

EPA initiated an overall RI/FS for the entire San Gabriel site in 1984 with a preliminary investigation termed the Supplemental Sampling Program. This investigation was completed in 1986 and included the sampling of 70 existing ground-water wells for a full range of organic contaminants, collection and evaluation of existing data, and regional ground-water flow modelling. Data were compiled and reviewed to develop a preliminary conceptual hydrogeologic model of the San Gabriel Valley. The results of the investigations provided much of the basis for planning the remedial investigations that have been performed in the San Gabriel Valley since 1986.

The PVOU is classified as an interim action because it is intended to control the migration of contamination. Additional remediation may be needed to clean up VOC contamination remaining in the ground water. EPA will use information collected during operation of the selected remedy to help determine the need for additional actions and the nature of the final remedy. This interim action will neither be inconsistent with, nor preclude, implementation of the final remedy. All of the OU specific actions currently being undertaken in the San Gabriel Valley are interim actions. It is anticipated that a final ROD will be issued for the entire San Gabriel Valley Superfund site once RD/RA work has been completed at all of the separate OUs.

5 Highlights of Community Participation

The Proposed Plan for this remedy, in the form of a fact sheet, was distributed to the parties on EPA's mailing list for the PVOU. The Proposed Plan, together with the Puente Valley Operable Unit Interim Remedial Investigation (RI) (CDM, 1997) and Feasibility Study (FS) (EPA, 1997), were also made available at EPA's Regional Office in San Francisco, and locally at three information repositories: the Hacienda Heights Public Library, the West Covina Library, and the Rosemead Library. The Administrative Record for the PVOU was placed in CD-ROM format in each repository, and the RI/FS was available on microfilm at each repository.

EPA held a public meeting to present the Proposed Plan and EPA's preferred alternative on January 28, 1998, at the La Puente High School in LaPuente, California. Notice of EPA's public meetings, availability of the Proposed Plan, and the announcement of a 30-day public comment period were published in the following newspapers:

- Los Angeles Times, San Gabriel Valley Edition January 16, 1998
- San Gabriel Valley Tribune January 16, 1998

EPA extended the public comment period in response to requests from members of the public. EPA prepared a fact sheet announcing the extension of the public comment period and distributed it to the parties on EPA's mailing list for the PVOU. The total public comment period was 60 days and ran from January 15 to March 16, 1998. EPA received several sets of written comments during the public comment period. These comments are addressed in the Responsiveness Summary, included as Part II of this ROD (contained in Volume 2).

This decision document presents the selected remedial action for the ROD site and has been chosen in accordance with CERCLA, as amended, and to the extent practicable, the National Oil and Hazardous Substances Pollution Contingency Plan (NCP). The ROD is based on the Administrative Record.

6 Summary of Site Characteristics

The PVOU is part of the San Gabriel Valley Superfund Site located in eastern Los Angeles County, California. Puente Valley is an approximately 12-1/2-mile-long and 2- to 2-1/2-mile-wide tributary basin to the Main San Gabriel Basin.

The majority of the PVOU is highly industrialized and is occupied by the City of Industry, an incorporated city that covers approximately 11 square miles. Approximately 96 percent of the city is zoned for industrial purposes; the rest is zoned for commercial purposes. Nearly 85 percent of the land within the boundaries of the City of Industry has been developed, and accommodates approximately 1,700 businesses. Future development plans will likely be for industrial and commercial uses.

A small amount of land within the City of Industry is allotted for residential purposes and is occupied by approximately 631 residents. The Cities of La Puente and Walnut also occupy portions of the PVOU. These portions are zoned primarily for residential purposes and are likely to remain residential.

The State of California considers all subsurface zones of relatively high permeability (shallow, intermediate, and deep) in the PVOU to be municipal water sources. VOCs are the primary organic contaminants found in the PVOU above EPA maximum contaminant levels (MCLs). Tetrachloroethene (PCE) and trichloroethene (TCE) are the VOCs that have been detected most often in ground water, although 1,1-dichloroethane, 1,1-dichloroethene, 1,2-dichloroethene, and 1,1,1-trichloroethane have also been detected above MCLs in the PVOU. Figures 2 and 3 show 1997 VOC concentrations in the shallow and intermediate zones.

Sources of the ground-water contamination include firms engaged in metal cleaning, coating, and manufacturing; chemical product manufacturing; plastics; aerosols; electric component manufacturing; printing; rubber manufacturing; die casting; and engineering. To address these sources of ground-water contamination, the RWQCB, under a grant from EPA, oversees investigations and cleanups at facilities where releases have occurred. In general, VOC concentrations are highest in the shallow ground water beneath facility source areas where releases have occurred. VOCs have also spread to the intermediate zone and portions of the deep zone primarily as a result of downward hydraulic gradients.

7 Summary of Site Risks

In 1994, EPA completed a Preliminary Baseline Risk Assessment for the Puente Valley OU (EPA, 1994). The purpose of the risk assessment was to evaluate potential adverse health effects from exposure to contaminated ground water. The results of the risk assessment assisted EPA to determine if any remedial actions would be necessary to protect human health or the environment. The risk assessment process included: (a) identifying chemicals present in ground water, (b) characterizing the population potentially exposed to these contaminants, and (c) evaluating the potential health effects resulting from exposure to the contaminated ground water. EPA has evaluated how individuals might be exposed to these contaminants under both current and future conditions, and potential risks to natural resources.

7.1 Identification of Chemicals of Potential Concern

Fifty-four VOCs detected in ground water from production and monitoring wells in the PVOU were included in the risk assessment as chemicals of potential concern (COPCs) in ground water. Eight VOCs detected in surface water samples were included in the risk assessment as COPCs in surface water. (See Tables 2 and 3 in the Puente Valley Operable Unit Preliminary Baseline Risk Assessment prepared by CH2M HILL for the EPA, March 1, 1994.) Table 1 summarizes the COPCs in ground water used in the baseline risk assessment, and their respective applicable or relevant and appropriate requirements (ARARs).

7.2 Exposure Assessment

Exposure assessment is the determination or estimation of the magnitude, frequency, duration, and route of exposure. This section briefly summarizes the potentially exposed populations, the exposure pathways evaluated, and the exposure quantification from the risk assessment performed for the PVOU.

Land use in the PVOU includes primarily commercial/industrial and residential. Ground water from five of the seven production wells sampled in 1991 and 1992 is currently being used for domestic purposes. Exposure to contaminants in ground water could occur through the use of ground water for domestic purposes, such as ingestion of water used for drinking and cooking. Residents and workers could also be exposed to contaminants in ground water through the transport of VOCs from ground water through soil and into ambient air or through the foundation of a building. EPA evaluated three scenarios in the risk assessment for the PVOU in which individuals might be exposed to the contaminated ground water:

1. Potential for a current resident to be exposed to contamination in ground water through domestic use
2. Potential for a future resident to be exposed to contamination in ground water through domestic use

3. Potential for current and future workers and residents to be exposed to contamination in ground water through transport of VOCs from ground water through the foundation of a building

EPA evaluates potential exposure to contaminated ground water in the absence of regulatory controls, such as the Safe Drinking Water Act, which is designed to prevent delivery of water for potable use if contaminant concentrations exceed MCLs. Based on potential for exposure frequency, duration, and estimated intake, residents exposed to contaminated ground water used for domestic purposes are expected to be the maximally exposed population.

7.3 Toxicity Assessment

Table 1 shows the COPCs for the PVOU. One of the compounds, vinyl chloride, is a known human carcinogen (EPA weight of evidence class A); four of the compounds (tetrachloroethene, trichloroethene, 1,2-dichloroethane, and methylene chloride) are probable human carcinogens (EPA weight of evidence class B2); and three of the compounds (1,4-dichlorobenzene, 1,1,-dichloroethene, and 1,1,2-trichloroethane) are possible human carcinogens (EPA weight of evidence class C). Based on data from various animal studies, the oral carcinogenic slope factors for these compounds are:

Vinyl Chloride – 1.9 $(mg/kg/day)^{-1}$ (Source: Health Effects Assessment Summary Tables (HEAST), EPA, 1992a).

Tetrachloroethene – 0.051 $(mg/kg/day)^{-1}$ (Source: Environmental Criteria and Assessment Office, EPA, 1993b).

Trichloroethene – 0.011 $(mg/kg/day)^{-1}$ (Source: Health Effects Assessment Summary Tables, EPA, 1992a).

1,2-Dichloroethane – 0.091 $(mg/kg/day)^{-1}$ (Source: Integrated Risk Information System (IRIS), EPA, 1993a).

Methylene Chloride – 0.0075 $(mg/kg/day)^{-1}$ (Source: Integrated Risk Information System (IRIS), EPA, 1993a).

1,4-Dichlorobenzene – 0.024 $(mg/kg/day)^{-1}$ (Source: Health Effects Assessment Summary Tables, EPA, 1992a).

1,1,2-Trichloroethane – 0.057 $(mg/kg/day)^{-1}$ (Source: Integrated Risk Information System (IRIS), EPA, 1993a).

With the exception of 1,4-dichlorobenzene, all of the above compounds are also considered carcinogenic through the inhalation route. Based on data from various animal studies, the inhalation carcinogenic slope factors are:

Vinyl Chloride – 0.3 $(mg/kg/day)^{-1}$ (Source: Health Effects Assessment Summary Tables, EPA, 1992a).

Tetrachloroethene – 0.002 $(mg/kg/day)^{-1}$ (Source: Environmental Criteria and Assessment Office, EPA, 1993b).

Trichloroethene – 0.006 $(mg/kg/day)^{-1}$ (Source: Environmental Criteria and Assessment Office, EPA, 1993b).

1,2-Dichloroethane – 0.091 $(mg/kg/day)^{-1}$ (Source: Integrated Risk Information System (IRIS), EPA, 1993a).

Methylene Chloride – 0.002 $(mg/kg/day)^{-1}$ (Source: Integrated Risk Information System (IRIS), EPA, 1993a).

1,1,2-Trichloroethane – 0.056 $(mg/kg/day)^{-1}$ (Source: Integrated Risk Information System (IRIS), EPA, 1993a).

At this time, slope factors are not available for the dermal route of exposure. The preliminary risk assessment did not quantitatively estimate dermal absorption from household water use because of the uncertainty associated with making a quantitative estimate of such exposure.

In addition to their classification as carcinogens, five of the carcinogenic COPCs have toxicity data indicating their potential for adverse noncarcinogenic effects in humans. The chronic toxicity data available for these compounds have been used to develop oral reference doses (RfDs). The oral RfDs for these compounds are:

Tetrachloroethene – 0.01 (mg/kg/day) (Source: Integrated Risk Information System (IRIS), EPA, 1993a).

Trichloroethene – 0.006 (mg/kg/day) (Source: Environmental Criteria and Assessment Office, EPA, 1993b).

Methylene Chloride – 0.06 (mg/kg/day) (Source: Integrated Risk Information System (IRIS), EPA, 1993a).

1,1,2-Trichloroethane – 0.004 (mg/kg/day) (Source: Integrated Risk Information System (IRIS), EPA, 1993a).

1,4-dichlorobenzene is also considered to have noncarcinognic effects via inhalation. The inhalation reference dose for 1,4-dichlorobenzene is 0.2 milligrams per kilogram per day (mg/kg/day) (HEAST).

Chronic toxicity testing has also established that 1,1-dichloroethene, 1,2-dichloroethene, 1,1,1-trichloroethane, and 2-propanone have noncancer endpoints that primarily affect the liver. The oral RfDs for these compounds are:

1,1-Dichloroethene – 0.009 (mg/kg/day) (Source: Integrated Risk Information System (IRIS), EPA, 1993a).

1,2-Dichloroethene – 0.009 (mg/kg/day) (Source: Health Effects Assessment Summary Tables, EPA, 1992).

1,1,1-Trichloroethane – 0.09 (mg/kg/day) (Source: Health Effects Assessment Summary Tables, EPA, 1992).

2-Propanone – 0.10 (mg/kg/day) (Source: Integrated Risk Information System (IRIS), EPA, 1993a).

7.4 Risk Characterization Summary

This section presents the results of the evaluation of the potential risks to human health associated with exposure to contaminated ground water at the PVOU. Exposure scenarios are evaluated by estimating the noncarcinogenic and carcinogenic risks associated with them.

The potential for carcinogenic effects is evaluated by estimating the excess lifetime cancer risk, which is the probability of developing cancer during one's lifetime over the background probability of developing cancer (i.e., if no exposure to site contaminants occurred). These risks are probabilities that usually are expressed in scientific notation (e.g., 1×10^{-6}). An excess lifetime cancer risk of 1×10^{-6} indicates that an individual has a 1 in 1,000,000 chance of developing cancer as a result of site-related exposure. EPA uses an excess lifetime cancer risk of 1×10^{-6} as an acceptable incremental cancer risk above background, and an excess lifetime cancer risk of one in ten thousand (1×10^{-4}) as the point at which action is generally warranted at a site (EPA, 1991c), thus creating EPA's generally acceptable risk range of 1×10^{-4} to 1×10^{-6}.

Noncarcinogenic risk is assessed by comparing the estimated daily intake of a chemical to its RfD. An RfD represents a level that an individual may be exposed to without any adverse effects. The comparison is expressed as a hazard quotient (HQ). An HQ less than one indicates that noncarcinogenic effects from exposure to that chemical are unlikely. HQs for all chemicals of concern that affect the same target organ are added to generate the Hazard Index (HI). An HI less than one indicates that noncarcinogenic effects from all the contaminants are unlikely. Conversely, an HI greater than one indicates that site-related exposures may present a risk to human health.

The results of the baseline risk assessment indicate that the potential for a future resident to be exposed to ground-water contamination through domestic use resulted in a total estimated incremental lifetime cancer risk greater than one person in one thousand (1×10^{-3}). This risk exceeds the acceptable risk range and therefore indicates action at the site is warranted.

Exposure of Residents to Ground Water Through Domestic Use. Tables 2 and 3 present the Estimated Noncancer Hazard Index and Total Excess Lifetime Cancer Risk , respectively, from domestic use of ground water. To assess potential current residential exposure to ground water through domestic use, all active production wells sampled in 1991 and 1992 that had detections for VOCs were evaluated. These wells include production wells 08000077, 98000068, and 98000108. The estimated HI is less than one for both the average and Reasonable Maximum Exposure (RME) scenarios for these three production wells. The estimated excess lifetime cancer risk for both the average and RME exposure scenarios are below or within EPA's 1×10^{-4} to 1×10^{-6} acceptable risk range.

To assess potential future exposure to contamination in ground water through domestic use, the preliminary risk assessment focused on the eight areas within the PVOU that have ground-water concentrations exceeding 10 times the MCLs. Potential future residential exposures were evaluated based on well groups sampled in 1991 and 1992 within the eight areas. The estimated hazard index for the average ingestion and inhalation exposure scenario ranges from 0.4 in well group 8 to 40 for ingestion and 30 for inhalation in well

group 3. The RME ingestion and inhalation exposure scenario ranges from 0.5 in well group 8 to 60 in well group 3. Both average and RME exposure scenarios exceed the hazard index of 1 (and hazard quotient of 1) for well groups 3 and 5, suggesting that exposure may present a risk to human health.

The estimated excess lifetime cancer risk for the average exposure scenario exceeds EPA's acceptable risk range in well groups 3, 4, and 5. The estimated excess lifetime cancer risk for the average ingestion exposure scenario ranges from 4×10^{-6} in well group 1 to 4×10^{-4} in well group 5. For the average inhalation scenario, the estimated excess lifetime cancer risk ranges from 7×10^{-7} in well group 1 to 2×10^{-4} in well group 5.

The RME exposure scenarios exceeded EPA's acceptable risk range for well groups 2, 3, 4, 5, 6, and 7. The RME ingestion scenario excess cancer risk ranged from 1×10^{-5} in well group 1 to 3×10^{-3} in well group 5. RME inhalation risks ranged from 2×10^{-6} in well group 1 to 2×10^{-3} in well group 5.

Additionally, exposure to 1,1-dichloroethene in ground water was evaluated using the modified RfD/cancer ratio approach that EPA Regional IX and the Office of Drinking Water recommend. The modified RfD approach is recommended on a chemical-by-chemical basis for certain group C chemicals (e.g., 1,1-dichloroethene) that have limited evidence of carcinogenicity. Because of this limited evidence, the modified RfD approach utilizes the risk assessment protocols for compounds with noncancer effects, but modifies the protocol by adding a safety factor of 10 to be health-protective. Using the modified RfD approach, the estimated ratio for potential current residential exposures ranges from 0.2 to 2. These estimates are health-protective because they do not consider treatment or blending of contaminated water with clean water, and incorporate a safety factor. For potential future residential exposure to 1,1-dichloroethene in ground water, the cancer ratio is greater than one for all well groups except well groups 4 and 6. Although ratios greater than 1 suggest possible cancer concerns, there is very limited evidence that this contaminant is carcinogenic in humans or animals.

Exposure of Workers and Residents to Contaminants in Ground Water Through the Transport of VOCs from Ground Water Through the Foundation of a Building. A screening assessment was used to quantitatively evaluate potential risk to current workers and futures workers and residents as a result of exposure to contaminants in ground water through the transport of VOCs from ground water through the foundation of a building. Five chemicals were evaluated in this assessment: 1,2-dichloroethane, 1,1-dichloroethene, methylene chloride, tetrachloroethene, and trichloroethene. The estimated hazard quotient was less than one for both the residential and worker exposure scenarios. The estimated excess lifetime cancer risk was below or within EPA's acceptable risk range.

Exposure of Vegetation and Wildlife to Contaminants in Surface Water. Eight VOCs were detected in surface water in the San Jose Creek. Potential environmental receptors include vegetation and wildlife exposed to surface water in this area. The detected VOCs will be removed from water primarily by volatilization to the atmosphere. These VOCs are not expected to significantly bioconcentrate in aquatic organisms or adsorb to sediment. A comparison of concentrations detected in surface water to the corresponding chemical-specific acute and chronic Ambient Water Quality Criteria shows that the criteria are

considerably higher than the detected concentrations. Therefore, no adverse impact to aquatic organisms is predicted.

Based on this risk characterization summary, actual or threatened releases of hazardous substances at this site, if not addressed by the preferred alternative or one of the other active measures considered, may present a current or potential threat to public health, welfare, or the environment.

8 Description of Remedial Alternatives

EPA's Remedial Action Objectives (RAOs) for the PVOU are to:

- Prevent exposure of the public to contaminated ground water
- Inhibit contaminant migration from the more highly contaminated portions of the aquifer to the less contaminated areas or depths
- Reduce the impact of continued contaminant migration on downgradient water supply wells
- Protect future uses of less contaminated and uncontaminated areas

The RAOs reflect EPA's regulatory goal of restoring usable ground waters to their beneficial uses wherever practicable, within a time frame that is reasonable; or, if restoration is deemed impracticable, to prevent further migration of the plume, prevent exposure to the contaminated ground water, and evaluate further risk reduction (40 CFR Section 300.430(a)(1)(iii)(F)).

The RAOs for the PVOU do not include numeric, chemical-specific objectives in the aquifer or a time frame for restoration because this is an interim action. They do include VOC "mass removal" as a secondary objective. EPA's selected alternative will remove significant contaminant mass from the aquifer, in effect beginning the restoration process, but it will be designed for migration control rather than mass removal.

Four alternatives were evaluated in the FS for the PVOU:

- Alternative 1 - No Action
- Alternative 2 - Ground-water Monitoring
- Alternative 3 - Ground-water Control in the Shallow and Intermediate Zones at the Mouth of the Valley
- Alternative 4 - Ground-water Control in the Shallow and Intermediate Zones at the Mouth of the Valley and in the Intermediate Zone at Mid-Valley

A brief description of each of the four remedial alternatives is presented below.

8.1 Alternative 1 - No Action

The NCP requires a no-action alternative to provide a baseline for comparison to other alternatives. In this no-action alternative, no remedial actions are taken to control migration from or within the Puente Valley area. This alternative does not include any ground-water monitoring, extraction, or treatment, nor does it consider other ongoing activities that are not part of a CERCLA remedy that may or may not continue into the future. Ground-water

extraction at water supply wells is considered as part of background conditions in the PVOU area and, therefore, would continue to occur under Alternative 1.

8.2 Alternative 2 - Ground-water Monitoring

The only remedial action incorporated into Alternative 2 is ground-water monitoring to monitor compliance with RAOs and performance criteria in the shallow, intermediate, and deep zones at mid-valley and the mouth of the valley. Alternative 2 does not have any extraction, treatment, conveyance, or discharge components (other than the same background pumping considered in Alternative 1) and, therefore, does not address contaminant migration.

Monitoring

For cost estimation and evaluation of the alternative, it was assumed that 16 new monitoring wells would be installed: 4 new wells downgradient of mid-valley in the intermediate and deep zones, and 12 new wells near the mouth of the valley in the shallow and intermediate zones.

8.3 Alternative 3 - Ground-water Control in the Shallow and Intermediate Zones at the Mouth of the Valley

Alternative 3 is containment of contaminated ground water in the shallow and intermediate zones at the mouth of the valley. For the purposes of cost estimation and evaluation, extraction and treatment systems were assumed to be implemented, though the actual remedy may differ. The remedy implemented will need to meet the performance criteria specified in Section 10 this ROD. Components of this alternative are as follows.

Extraction

The ground-water extraction in Alternative 3 includes four wells in each zone (shallow and intermediate). The total extraction rates from the shallow and intermediate zones are 700 and 1,000 gallons per minute (gpm), respectively, for a total flow of 1,700 gpm. The actual extraction well locations and rates will be determined during remedial design based on additional evaluation of the extent of contamination during the remedial design investigation.

Treatment

Extracted ground water will be treated by either air stripping with offgas treatment or liquid-phase carbon adsorption to remove VOCs prior to discharge. For cost estimation purposes, this alternative assumes a treatment system using air stripping with adsorption of VOCs in offgas. Construction of a single 1,700-gpm, centralized treatment plant near the mouth extraction system is assumed for this alternative.

If water is discharged to a municipal water supply system, treatment to reduce concentrations of total dissolved solids (TDS) and nitrate would probably be required for shallow ground water. The assumed level of treatment for inorganic constituents, if

required, would be to the MCL or secondary drinking water standard, as applicable. In the FS, a membrane separation process was assumed for discharge to a municipal water supply system.

Conveyance

Treated ground water may be discharged to Puente Creek or other surface waters or provided to a municipal supply system. Preliminary evaluations that PVSC conducted indicate that there are nearby water distribution systems operated by San Gabriel Valley Water Company, Suburban Water Systems, and the City of Industry. These purveyors have indicated that the water demands for any of these nearby systems substantially exceed the ground-water extraction rate assumed for this alternative.

Discharge

As described above, treated water may be either discharged to surface waters or to a water supply line for municipal use.

Monitoring

Alternative 3 also includes a monitoring system to ensure compliance with RAOs and performance criteria in the shallow, intermediate, and deep zones at mid-valley and the mouth of the valley. In addition, selected monitoring wells may provide an early warning system for extraction and treatment systems. A total of 12 new wells was assumed: 4 new wells downgradient of mid-valley in the intermediate and deep zones, and 8 new wells near the mouth of the valley in the shallow and intermediate zones. Implementation of this monitoring program during the initial stages of the remedial design will help to define design parameters.

8.4 Alternative 4 - Ground-water Control in the Shallow and Intermediate Zones at the Mouth of the Valley and in the Intermediate Zone at Mid-Valley

Alternative 4 includes all of the components described for Alternative 3, plus ground-water extraction and treatment components in the intermediate zone at mid-valley. The additional extraction is intended to address migration of contamination in the intermediate zones. The remedial action components described below have been defined only for the purposes of cost estimation and evaluation. If Alternative 4 is selected, the actual remedy implemented will need to meet the performance criteria identified in this ROD, and could therefore have different components than those assumed for the FS.

Extraction

As stated above, Alternative 4 includes the same mouth of the valley pumping system as described for Alternative 3. Installation of four extraction wells (screened from 200 to 250 feet below ground surface (bgs) has been assumed along the west side of Hacienda Boulevard, with one well south of San Jose Creek and three wells north of the creek. Three of the wells have an extraction rate of 150 gpm each. The fourth well provides an extraction

rate of 100 gpm, yielding a total extraction rate of 550 gpm from the intermediate zone at mid-valley.

Treatment

Alternative 4 includes the same treatment processes and mouth of the valley treatment plant described for Alternative 3. Alternative 4 assumes that a separate, 550-gpm, mid-valley treatment plant will be built to treat ground water extracted from the mid-valley system. If it appears to be more cost-effective, a single treatment plant system could be designed to treat water extracted from both the mouth of the valley and mid-valley systems. If discharge to San Jose Creek is selected as the discharge option, a treatment plant located closer to San Jose Creek would reduce treated water conveyance costs.

Conveyance

The conveyance system includes untreated water pipelines from the extraction wells to the treatment plant and treated water pipeline alignments to the San Jose Creek and potential connection points to municipal water supply system lines. Several potential connection points to water supply systems exist in the treatment plant vicinity. Suburban Water Systems has a 16-inch-diameter pipeline adjacent to Hacienda Boulevard. The City of Industry operates a 16-inch-diameter pipeline adjacent to Valley Boulevard. The San Gabriel Valley Water Company operates a 14-inch pipeline that extends along the south side of San Jose Creek, and also has a 12-inch-diameter pipeline along Valley Boulevard west of Proctor Avenue. Discharge to nearby San Jose Creek is also an option.

Discharge

As discussed above, water may be either discharged to surface waters or to a water supply line for municipal use.

Monitoring

Alternative 4 includes the monitoring system to monitor compliance with RAOs and performance criteria in the shallow, intermediate, and deep zones at mid-valley and the mouth of the valley. A total of 13 new wells is assumed: 5 new wells in the mid-valley area (intermediate and deep zones) and 8 new wells near the mouth of the valley (shallow and intermediate zones). Implementation of this monitoring program during the initial stages of the remedial design will help to define design parameters.

9 Summary of Comparative Analysis of Alternatives

The four remedial alternatives described in Section 8 are compared to the Superfund nine evaluation criteria listed in 40 CFR Section 300.430. The comparative analysis provides the basis for determining which alternative presents the best balance of the criteria. The first two evaluation criteria are considered *threshold criteria* that the selected remedial action must meet. The five *primary balancing criteria* are balanced to achieve the best overall solution. The two *modifying criteria*, state and community acceptance, are also considered in remedy selection.

Threshold Criteria

- **Overall Protection of Human Health and the Environment** addresses whether each alternative provides adequate protection of human health and the environment, and describes how risks posed through each exposure pathway are eliminated, reduced, or controlled through treatment, engineering controls, and/or institutional controls.
- **Compliance with ARARs** addresses the requirement of Section 121(d) of CERCLA that remedial actions at least attain legally applicable or relevant and appropriate federal and state requirements, standards, criteria, and limitations, which are collectively referred to as "ARARs," unless such ARARs are waived under CERCLA Section 121(d)(4).

Primary Balancing Criteria

- **Long-term Effectiveness and Permanence** refers to the ability of a remedy to maintain reliable protection of human health and the environment over time.
- **Reduction of Toxicity, Mobility, or Volume Through Treatment** refers to the anticipated performance of the treatment technologies that may be included as part of a remedy.
- **Short-term Effectiveness** addresses the period of time needed to implement the remedy and any adverse impacts that may be posed to workers and the community during construction and operation of the remedy until cleanup goals are achieved.
- **Implementability** addresses the technical and administrative feasibility of a remedy from design through construction and operation. Factors such as availability of services and materials, administrative feasibility, and coordination with other governmental entities are also considered.
- **Cost** evaluates the estimated capital, operation and maintenance (O&M), and indirect costs of each alternative in comparison to other equally protective alternatives.

Modifying Criteria

- **State Acceptance** indicates whether the state agrees with, opposes, or has concerns about the preferred alternative.
- **Community Acceptance** includes determining which components of the alternatives interested persons in the community support, have reservations about, or oppose.

This section describes each threshold and primary balancing criterion, evaluates each alternative in relation to each criterion, and identifies advantages and disadvantages among the alternatives in relation to each criterion. Figure 4 presents a comparative matrix in which the four alternatives are ranked for each of the evaluation criterion. The details of how the rankings have been assigned for each criterion are provided below.

9.1 Overall Protection of Human Health and the Environment

The NCP requires that all alternatives be assessed to determine whether they can adequately protect human health and the environment from unacceptable risks from site contamination. These risks can be mitigated by eliminating, reducing, or controlling exposure to hazardous substances, pollutants, or contaminants.

9.1.1 Overall Protection of Human Health and the Environment: Evaluation of Alternatives

Alternatives 1 and 2 do not provide protection of human health and the environment. These two alternatives allow migration of VOC contamination to continue. Alternative 2 would include ground-water monitoring to provide early warning of expected increases in contaminant concentrations that may interfere with the ability of area water purveyors to supply ground water meeting MCLs.

Alternatives 3 and 4 provide protection of human health and the environment by inhibiting contaminant migration, thereby protecting future uses of less contaminated and uncontaminated ground water. Alternatives 3 and 4 would also reduce the toxicity, mobility, and volume of the contaminants and remove significant contaminant mass from the aquifer. Alternative 4 includes additional extraction in the mid-valley intermediate zone that is not assumed in Alternative 3. This extraction would provide additional protection for the intermediate and deep zone downgradient of mid-valley and remove additional contaminant mass.

Alternatives 1 and 2 are assigned low rankings in Figure 4 because they fail to provide migration control. Alternatives 3 and 4 are assigned high rankings because they meet this threshold requirement of protecting human health and the environment. Alternative 4 is ranked slightly higher than Alternative 3 because of the additional migration control and mass removal at mid-valley.

9.2 Compliance with ARARs

This evaluation criterion is also a threshold requirement and is used to determine if each alternative would attain federal and state ARARs, or whether there is adequate justification for invoking waivers for specific ARARs.

9.2.1 Compliance with ARARs: Evaluation of Alternatives

Alternatives 1 and 2 do not meet ARARs. Both alternatives allow for continued uncontrolled migration of contaminants, at levels exceeding MCLs, into production wells located at the mouth of Puente Valley. Neither alternative ensures that water produced from these wells will meet drinking water ARARs. The continued migration of contaminants under Alternatives 1 and 2 would not meet the chemical-specific ARARs established for the uncontaminated ground water in the intermediate zone.

Alternatives 3 and 4 meet the ARARs described in Section 11 of this ROD. Both of the retained treatment technologies are technically capable of meeting ARARs for VOCs in the extracted ground water. Since this is an interim remedial action to contain contamination, EPA has not established chemical-specific ARARs for the contaminated portions of the aquifer.

Alternatives 1 and 2 are assigned low rankings because they do not meet this threshold requirement of complying with ARARs. Alternatives 3 and 4 are assigned high rankings because they do comply with ARARs. There are no significant differences in the ability of Alternatives 3 and 4 to comply with ARARs.

9.3 Long-Term Effectiveness

This evaluation criterion assesses the extent to which each remedial alternative reduces risk after the remedial action objectives are met. Residual risk can result from exposure to untreated waste or treatment residuals. The magnitude of the risk depends on the magnitude of the wastes and the adequacy and reliability of controls, if any, that are used to manage untreated waste and treatment residuals. For this interim action, untreated waste refers to any contaminated ground water not removed from the aquifer.

The performance of the alternatives in relation to this criterion is evaluated primarily by estimating the extent to which each alternative prevents the migration of contamination into less contaminated and uncontaminated areas. Preventing or reducing contaminant migration reduces contaminant concentrations in downgradient areas, reducing risk by reducing the likelihood of exposure. Performance was evaluated using ground-water modelling. Because this is an interim remedy to contain contaminant migration, untreated wastes will remain in the ground water.

9.3.1 Long-Term Effectiveness and Permanence: Evaluation of Alternatives

Ground-water modelling results presented in the FS suggest Alternatives 1 and 2 do not contain contaminant migration in either the shallow or intermediate zones in the PVOU. Alternatives 3 and 4 are effective at containing migration of contamination at the mouth of the valley in the shallow and intermediate zones. Modelling results indicate that only

Alternative 4 is effective at containing intermediate zone migration at mid-valley, although Alternative 3 provides a measure of protection by containing contamination in the intermediate zone at the mouth of the valley.

Alternatives 1 and 2 do not prevent contaminant migration in either the shallow or the intermediate zones and, therefore, are assigned a low ranking in Figure 4 because they do not provide significant long-term effectiveness and permanence. Alternatives 3 and 4 are assigned a high ranking because they do contain contaminant migration. Alternative 4 is ranked slightly higher than Alternative 3 because of the additional contaminant migration control provided at mid-valley.

9.4 Reduction of Toxicity, Mobility, and Volume Through Treatment

This criterion addresses the preference, as stated in the NCP, for selecting remedial actions employing treatment technologies that permanently and significantly reduce toxicity, mobility, or volume of the hazardous substances as a principal element of the action. This preference is satisfied when treatment is used to reduce the principal threats at a site through destruction of toxic contaminants, reduction of total mass of toxic contaminants, irreversible reduction in contaminant mobility, or reduction of total volume of contaminated media.

This evaluation focuses on the following factors for each remedial alternative:

- Whether the alternative satisfies the statutory preference for treatment as a principal element
- The treatment process employed, including the amount of hazardous materials that will be destroyed or treated and the degree of expected reduction in toxicity, mobility, or volume
- The degree to which treatment is irreversible
- The type and quantity of treatment residuals that will remain following treatment

9.4.1 Reduction of Toxicity, Mobility, or Volume Through Treatment: Evaluation of Alternatives

Alternatives 1 and 2 do not provide any reduction in toxicity, mobility, or volume and do not satisfy the statutory preference for treatment. Alternatives 3 and 4 satisfy the statutory preference for treatment. Both of these alternatives would significantly reduce the volume and mobility of contamination by inhibiting further contaminant migration. The two treatment technologies retained for Alternatives 3 and 4, air stripping with offgas controls and liquid-phase carbon adsorption, would irreversibly reduce the toxicity and volume of contaminants in the extracted ground water and result in an effluent stream that meets drinking water standards for VOCs. Both treatment technologies would result in the destruction of VOCs if the granular activated carbon is regenerated. These technologies would create residuals if used carbon is not regenerated.

Alternative 3 is estimated to provide removal of 15,200 pounds of VOCs over a 30-year period of operation. Alternative 4 is estimated to provide removal of 25,000 pounds of VOCs over a 30-year period of operation. The increase in mass removal for Alternative 4 over Alternative 3 is estimated to be 9,800 pounds. The actual operation of the extraction and treatment systems in Alternatives 3 and 4 could yield lower or higher values.

Alternatives 1 and 2 are assigned a low ranking in Figure 4 because they do not satisfy the statutory preference for treatment and do not reduce the toxicity, mobility, or volume of contaminants. Alternatives 3 and 4 are assigned a high ranking because they do satisfy the statutory preference for treatment and significantly reduce the toxicity, mobility, and volume of contaminants by inhibiting contaminant migration and producing an effluent stream that meets MCLs. Alternative 4 is ranked slightly higher because of the additional contaminant migration control and mass removal in the mid-valley area incorporated into this alternative.

9.5 Short-Term Effectiveness

This criterion evaluates the effects of each remedial alternative on human health and the environment during the construction and implementation phase until remedial action objectives are met. The following factors are addressed for each alternative:

- **Protection of workers and the community during construction and implementation phases.** This factor qualitatively examines risk that results from implementation of the proposed remedial action and the effectiveness and reliability of protective measures.
- **Environmental impacts**. This factor addresses the potential adverse environmental impacts that may result from the construction and implementation of an alternative. This factor also evaluates the reliability of the available mitigation measures to prevent or reduce potential impacts.
- Time until RAOs are achieved.

9.5.1 Short-Term Effectiveness: Evaluation of Alternatives

Alternative 1 is not evaluated for this criterion because there is no construction or implementation phase. None of the alternatives pose unmitigable risks to the community during construction and implementation. Nor do any of the alternatives pose unmitigable risks to workers beyond general construction hazards associated with large construction projects. No unmitigable negative environmental impacts are anticipated in the areas in which facilities would be constructed.

For Alternative 2, the RAOs would not be met as long as contaminant migration continues. Additional investigation is required to assess the current magnitude of contaminant migration in portions of the PVOU area. However, the modelling for Alternatives 1 and 2 suggests that contaminant migration is likely to continue for a considerable length of time. The RAOs would be met for Alternatives 3 and 4 as soon as the ground-water extraction and treatment components begin operation.

The time until RAOs are achieved (i.e., system startup) for Alternatives 3 and 4 is anticipated to be within approximately 3 to 5 years. However, there are several

implementability issues (described in Section 9.6) that could impact this time. In addition, implementation of these alternatives could be complicated by the need to obtain sites for remedy components (wells and treatment facilities) and the need to construct conveyance systems in heavily developed areas. Ground-water treatment may create hazardous waste residuals (e.g., spent carbon).

Alternatives 3 and 4 are assigned a high ranking because there are no unmitigable risks to the community, workers, or the environment during construction and implementation. There are no significant differences between the two alternatives, although Alternative 4 will likely take slightly longer to meet RAOs because of the additional construction at mid-valley. Although there are no unmitigable risks associated with construction and implementation of Alternative 2 and there is less overall construction, Alternative 2 is assigned a medium ranking because RAOs are never achieved.

9.6 Implementablity

This criterion addresses the technical and administrative feasibility of implementing an alternative and the availability of various services and materials required during its implementation. The following factors are considered:

- Technical Feasibility
  - Ability to construct and operate: addresses any technical difficulties and unknowns associated with construction or operation of the technology
  - Reliability of technology: focuses on the likelihood that technical problems associated with implementation will lead to schedule delays
  - Ease of undertaking additional remedial action: includes a discussion of what, if any, future remedial actions may need to be undertaken and how the remedial action would interfere with, or facilitate, the implementation of future actions
- Administrative Feasibility
  - Coordination with other agencies, including the need for agreements with parties other than EPA required for construction and operation of the remedy
- Availability of Services and Materials
  - Availability of necessary equipment, specialists, and provisions to assure any necessary resources
  - Availability of services and materials, plus the potential for obtaining competitive bids

9.6.1 Implementability: Evaluation of Alternatives

Alternative 1 is not evaluated for this criterion because no action is implemented. As described above, the implementability evaluation incorporates several factors. Each of these is discussed separately in the following text.

Technical Feasibility: Ability to Construct and Operate. The extraction, treatment, and conveyance technologies included in Alternatives 3 and 4 and the monitoring technologies included in all three remedial action alternatives are widely used. No significant difficulties are expected in construction and operation of these technologies.

Technical Feasibility: Reliability of Technology. The extraction, treatment, conveyance, and monitoring technologies in Alternatives 2, 3, and 4 are generally known to be proven and reliable.

Technical Feasibility: Ease of Undertaking Additional Remedial Actions. The alternatives would not interfere with the implementation of future response actions to further contain contamination or restore ground water in the PVOU area.

Administrative Feasibility. There are not likely to be any significant administrative feasibility issues associated with implementation of Alternative 2, other than obtaining access agreements for monitoring well installation. Implementation of Alternatives 3 and 4 would require acquisition of property and / or easements for the construction of extraction wells, treatment facilities, and conveyance facilities.

In addition, implementing Alternatives 3 or 4 would require resolution of the following administrative issues associated with ground-water extraction and discharge of treated water to local water purveyors or to the Puente Creek:

- Agreements would need to be made with the Watermaster or with a water purveyor to account for extraction from the basin by the parties implementing the selected remedy because these parties do not have water rights.
- Agreements would need to be reached with water purveyors that would receive treated water from the ground-water treatment facilities specifying the amount of water each purveyor would accept; the treated water delivery location; responsibility for any necessary capital improvements to purveyor systems; and to determine operational, liability, financial, and other arrangements.
- Water purveyors would need to obtain approval for modifications to their water supply permits.

Availability of Services and Materials. Implementation of Alternatives 3 and 4 would require fabrication of treatment plant equipment. Required services and materials are believed to be available, including qualified contractors for construction and operation of the necessary facilities.

Alternative 2 is assigned a high ranking in Figure 4 because there are no significant issues that could impact implementability of this monitoring-only alternative. Alternatives 3 and 4 are assigned a medium ranking because of the administrative issues associated with ground-water extraction and treated water discharge. Because the anticipated flow rates are not high (less than 2,500 gpm), it is expected that these administrative issues will not result in extensive delays in project implementation.

The technical feasibility of Alternatives 3 and 4 is similar, although the more complex conveyance and treatment facilities required in Alternative 4 are more likely to lead to schedule delays.

9.7 Cost

This criterion addresses the total cost of each alternative. This includes short- and long-term costs, and capital and O&M costs. The following cost elements are considered for each alternative:

- **Capital Cost.** Direct capital cost includes the cost of construction, labor, equipment, land, site development, and service. Indirect capital cost includes engineering fees, license and permit cost, startup and shakedown costs, and contingencies.
- **O&M Cost.** Annual O&M cost includes operating labor cost, maintenance materials and labor, pumping and treatment energy costs, monitoring costs, and all other postconstruction costs necessary to ensure continuous effective operation of the alternative.
- **Total Present Worth.** The total present worth of each alternative is calculated at an interest rate of 5 percent and a time period of 30 years. Total present worth for each alternative includes capital cost plus the present worth of the annual O&M costs.
- **Cost per Pound of Mass Removed.** The cost per pound of VOC mass removed is calculated for each alternative that includes ground-water extraction and treatment.

The cost estimates are considered order-of-magnitude level estimates (i.e., the cost estimates have an expected accuracy of +50 to -30 percent). The assumption of a 30-year operating period is based on EPA guidance and does not reflect any specific finding regarding the duration of the remedy.

9.7.1 Cost: Evaluation of Alternatives

Although there is no cost presented for the no-action alternative (Alternative 1), there have been and would continue to be substantial financial impacts on local water purveyors or their rate payers because of the continued migration of contamination to their production wells. Table 4 summarizes the estimated costs for Alternatives 2 through 4, respectively.

9.7.2 Cost: Comparison of Alternatives

Table 4 compares the cost of each alternative for capital costs, long-term O&M costs, and present worth. The short-term capital costs range from $2,344,000 for Alternative 2 to $11,751,000 for Alternative 4. The annual O&M costs range from $360,000 for Alternative 2 to $1,634,000 for Alternative 4.

9.8 State Acceptance

The State of California has provided comments and feedback to EPA throughout the RI/FS process for the PVOU. In a letter dated September 24, 1998, the California Department of Toxic Substance Control (DTSC), as lead agency for the state, concurred with EPA's selected remedy. In addition, the RWQCB approved EPA's selected remedy at a meeting held on September 14, 1998.

9.9 Community Acceptance

EPA received written comments from three individuals and several organizations or agencies on the Proposed Plan for this interim action at the PVOU. In addition, EPA received limited oral comments and questions at the public meeting held in January 1998 to discuss EPA's plans. EPA responded directly to the oral questions and comments at the public meeting. The entire transcript for the public meeting is included in the Responsiveness Summary in Part II of this ROD (Volume 2). All of the written comments, along with EPA's responses to them, are also presented in the Responsiveness Summary.

Several commenters expressed support for EPA's proposed remedy. Some commenters did not believe that the remedy was necessary or supported by the information that has been collected to date. EPA has determined that the preferred alternative presented in the Proposed Plan represents the most appropriate remedy for the ROD site. None of the comments received suggested a change to the overall remedy that EPA selected.

10 Selected Remedy

After considering CERCLA's statutory requirements, the detailed comparison of the alternatives using the nine criteria, and public comments, EPA, in consultation with the State of California, has determined that the most appropriate remedy for this site is Alternative 3: ground-water control in the shallow and intermediate zones at the mouth of Puente Valley. This alternative meets the two NCP threshold evaluation criteria; overall protection of human health and the environment and compliance with ARARs, and provides the best balance of the remaining Superfund evaluation criteria. EPA expects that this interim remedy will provide the basis for the final remedy for the PVOU.

Alternative 3 will be implemented using a performance-based approach. The performance-based approach specifies criteria ("performance criteria") that must be met while allowing flexibility in implementation. The performance criteria are designed to attain the RAOs for the PVOU and are described below.

10.1 Performance Criteria

Performance Criterion for the Shallow Zone:

The remedial action shall prevent ground water in the shallow zone with VOC contamination above 10 times the ARARs listed in Table 1 from migrating beyond its current lateral and vertical extent as described in the RI/FS for the PVOU.

Compliance with this criterion will be monitored at wells described as follows:

- Located laterally and vertically downgradient of contamination exceeding 10 times the relevant ARAR, but within areas in which there is detectable VOC contamination in the shallow zone
- Completed with screen lengths generally of 20 feet or less between the water table and 150 feet bgs. Longer screened intervals may be appropriate in limited situations and will be evaluated on a case-by-case basis

Extracted ground water will be treated by air stripping (with off-gas controls) or liquid-phase carbon adsorption. If alternative treatment technologies are identified, EPA will evaluate the alternative technologies in accordance with the criteria specified in 40 CFR Section 300.430 during remedial design.

Performance Criterion for the Intermediate Zone

The remedial action shall provide sufficient hydraulic control to prevent ground water in the intermediate zone with VOC contamination above ARARs listed in Table 1 from migrating beyond the B7 Well Field Area. The B7 Well Field Area is defined as the area encompassed by (1) the wells listed in Table 5 and (2) the current downgradient extent of contamination above ARARs in the intermediate zone, in the vicinity of the wells located in Table 5.

Compliance with this criterion will be monitored at compliance wells described as follows:

- Located within 2,000 feet or either (1) the current extent of ground water contaminated with any VOC exceeding its ARAR or (2) a production well listed in Table 5, whichever represents the nearest margin of the B7 Well Field Area
- Located along the northern, northwestern, and western margins of the B7 Well Field Area
- Completed with screen lengths of 20 feet or less within the intermediate zone. Larger screened intervals may be appropriate in limited situations and will be evaluated on a case-by-case basis
- Extracted ground water will be treated by air stripping (with off-gas controls) or liquid-phase carbon adsorption. If alternative treatment technologies are identified, EPA will evaluate the alternative in accordance with the criteria specified in 40 CFR Section 300.430 during remedial design.

Implementation of the remedial action cannot result in any adverse effects (i.e., increases in migration of contamination) to production wells that are not part of the remedial action. In addition, the remedial action must provide adequate capture of contamination above ARARs without relying on the effects of wells that are not part of the remedial action.

Compliance with Performance Criteria

Compliance with the performance criteria will be confirmed by quarterly sampling at compliance wells. Over time, if it can be demonstrated, based on historical monitoring data, that concentrations are unlikely to exceed the performance criteria in the short term, monitoring intervals may be lengthened. If it appears, based on trends in monitoring data, that concentrations may exceed the performance criteria, monitoring intervals may be shortened.

Concentrations at compliance wells will be used as an absolute criterion to demonstrate compliance. EPA expects that ground-water containment actions will be implemented sufficiently upgradient of these wells to provide enough of a buffer zone to allow additional actions to be taken, if necessary, to ensure compliance. EPA also anticipates that additional monitoring wells will be installed, or existing wells within this buffer zone will be used to provide an early warning system, and therefore provide sufficient time to address and prevent noncompliance.

Imminent exceedence of the performance criteria at compliance wells indicates that ground-water contamination is migrating, and hydraulic containment is required. Any actual or imminent exceedence of the performance criteria at the compliance wells will require ground-water extraction and treatment to achieve hydraulic containment. Actual exceedence of performance criteria at compliance wells will result in the initiation of enforcement actions.

Supplemental Explanation of Performance Criteria

The following paragraphs provide additional explanation of the performance criteria, their meaning and objectives to help clarify the intent of the criteria.

The "Shallow" and "Intermediate" Zones

The shallow zone generally encompasses the upper 100 feet of the saturated aquifer, including the interval between the water table and approximately 150 feet bgs. The intermediate zone generally includes the relatively coarse-grained interval between the shallow zone and deeper portions of the aquifer used for ground-water production. Both terms are used in a manner consistent with their usage in the Puente Valley Feasibility Study (EPA, 1997) and Remedial Investigation Report (CDM, 1997).

The "shallow" and "intermediate" zones are terms intended to describe general horizons within the aquifer(s) underlying the PVOU. During the course of the RI and development of the FS, the complex stratigraphy was simplified with generalizing assumptions about vertical intervals that appear to have similar characteristics throughout the area. However, actual subsurface conditions are not accurately described by terms that imply a well-layered system. The alluvial materials that underlie the PVOU are very heterogeneous, and are made up of interfingering lenses of variable hydraulic properties.

The shallow zone represents the upper portion of the saturated sediments at and under the water table. Contaminant concentrations, transport rates, and aquifer materials in the shallow zone are variable. Remediation of migrating contamination in the shallow zone requires careful analysis of this variability, and an adequate understanding of the extent, nature, and sources of contamination.

The intermediate zone is described as the "663" zone in portions of the RI and FS. This term is based on a well (MW 6-63) completed in a zone of relatively high permeability, and containing elevated levels of contamination. A similar zone can be generally correlated in well logs throughout much of the PVOU. Contamination appears to preferentially travel within this zone, as concentrations within it are typically higher than in horizons above and below it. Containment of contamination within the intermediate zone is considered essential to avoid future adverse impacts to deeper zones that provide water to drinking water wells. Water from the intermediate zone itself provides a small portion of the drinking water pumped from production wells at the mouth of the Puente Valley.

Compliance Wells

Compliance wells in the shallow zone will be located to ensure adequate monitoring of contaminant migration both laterally and vertically. Wells must provide sufficient information to assess whether the remedial action is preventing further migration of contaminants. The number, location, and monitoring of these wells must ensure that contamination is not spreading laterally away from areas that are already contaminated, or vertically into deeper zones.

Compliance wells in the intermediate zone must be located within 2,000 feet of the margins of the B7 Well Field Area, yet within areas of detectable contamination, as described in the performance criteria, and further described below. The intent of locating these wells in this manner is to provide compliance points that are sufficiently distant from existing contamination above MCLs to provide enough time to ensure that additional actions can be taken before threshold concentrations are exceeded. The wells must also be sufficient in number and adequately located to ensure that contamination above MCLs does not migrate away from the B7 Well Field Area.

Locations of all compliance wells are subject to EPA approval. Well screens will generally be of 20 feet or less. Concentrations in wells vary as a function of screen length because of blending. Therefore, wells with screens longer than 20 feet are not generally considered appropriate for monitoring compliance. However, based on conditions encountered during installation of these wells, it may be appropriate to consider longer screens to ensure monitoring of several high-permeability zones. Installation of wells with screens exceeding 20 feet will be considered on a case-by-case basis subject to EPA approval.

B7 Well Field Area

The B7 Well Field contains production wells that the San Gabriel Valley Water Company and the Suburban Water System own. The current extent of intermediate zone ground-water contamination extends into the B7 Well Field. The intermediate zone objective is to ensure that contamination does not migrate beyond the B7 Well Field Area. For the purposes of this remedial action, the B7 Well Field Area is defined as: (1) the wells listed in Table 5 and (2) the downgradient extent of contamination above MCLs in the vicinity of the wells listed in Table 5. The intent of defining the zone in this manner is to provide an adequate basis for designing a remedial action that does not allow contamination to spread away from its current extent. The B7 Well Field Area is considered to be a generally elliptical or circular area that encompasses both the B7 wells and the downgradient extent of contamination.

The FS identifies two approaches that should be able to accomplish the intermediate zone objectives. The first relies exclusively on installation of a new set of extraction wells upgradient of the production wells. These new wells must provide sufficient hydraulic control to capture contamination migrating into the production field. The second approach incorporates the production wells into the remedial action. If this approach is used, it must be demonstrated that pumping from the production wells alone, or in combination with new wells, provides sufficient hydraulic control. For the production wells to be considered part of the remedial action, the responsible parties will have to provide acceptable assurances to EPA that the wells will operate in a manner that ensures compliance with the performance criteria. If other approaches for achieving containment are identified, EPA will evaluate those methods in accordance with the criteria specified in 40 CFR Section 300.430.

For any remedial approach, compliance will be monitored at wells located along the margins of the B7 Well Field Area. If a new extraction system is used, monitoring wells must also be placed to measure the effectiveness of the system preventing migration of contaminants into the B7 Well Field. Any remedial action selected must, by itself, provide sufficient capture and be monitored to ensure that the performance criteria are not exceeded.

Adverse Effects

The term “adverse effects” is included in the performance criteria to prevent the design and installation of a hydraulic control system that maintains concentrations at compliance wells below specified thresholds at the expense of protecting production wells that are not part of the remedy. The principal adverse effect of concern is implementation of the remedial action in a manner that results in increased contaminant concentrations in wells that are not part of the remedial action. This requirement prevents, for example, the installation of new

extraction wells immediately upgradient of the compliance wells and downgradient of production wells that are not part of the remedial action. The remedial action must be protective of the environment and not result in adverse effects, either on production wells, or on the overall extent of contamination.

11 Applicable or Relevant and Appropriate Requirements (ARARs)

Section 121(d) of CERCLA, 42 U.S.C. § 9621(d) requires that remedial actions at CERCLA sites attain (or justify the waiver of) any federal or state environmental standards, requirements, criteria, or limitations that are determined to be legally applicable or relevant and appropriate. These applicable or relevant and appropriate requirements are referred to as "ARARs." Federal ARARs may include requirements promulgated under any federal environmental laws. State ARARs may only include promulgated, enforceable environmental or facility-siting laws of general application that are more stringent or broader in scope than federal requirements and that are identified by the state in a timely manner.

An ARAR may be either "applicable," or "relevant and appropriate," but not both. If there is no specific federal or state ARAR for a particular chemical or remedial action, or if the existing ARARs are not considered sufficiently protective, then other guidance or criteria to be considered (TBCs) may be identified and used to ensure the protection of public health and the environment. The NCP, 40 C.F.R. Part 300, defines "applicable," "relevant and appropriate," and "to be considered" as follows:

- **Applicable requirements** are those cleanup standards, standards of control, or other substantive requirements, criteria, or limitations promulgated under federal environmental or state environmental or facility siting laws that specifically address a hazardous substance, pollutant, contaminant, remedial action, location, or other circumstances found at a CERCLA site. Only those state standards that are identified by a state in a timely manner and that are more stringent than federal requirements may be applicable.

- **Relevant and appropriate requirements** are those cleanup standards, standards of control, and other substantive requirements, criteria, or limitations promulgated under federal environmental or state environmental or facility siting laws that, while not "applicable" to a hazardous substance, pollutant, contaminant, remedial action, location, or other circumstance at a CERCLA site, address problems or situations sufficiently similar to those encountered at the CERCLA site that their use is well suited to the particular site. Only those state standards that are identified in a timely manner and that are more stringent than federal requirements may be relevant and appropriate.

- **TBCs** consist of advisories, criteria, or guidance that EPA, other federal agencies, or states developed that may be useful in developing CERCLA remedies. The TBC values and guidelines may be used as EPA deems appropriate.

ARARs are identified on a site-specific basis from information about the chemicals at the site, the remedial actions contemplated, the physical characteristics of the site, and other appropriate factors. ARARs include only substantive, not administrative, requirements, and pertain only to onsite activities. Offsite activities must comply with all applicable federal,

state, and local laws, including both substantive and administrative requirements, that are in effect when the activity takes place. There are three general categories of ARARs:

- **Chemical-specific** ARARs are health- or risk-based concentration limits, numerical values, or methodologies for various environmental media (i.e., ground water, surface water, air, and soil) that are established for a specific chemical that may be present in a specific media at the site, or that may be discharged to the site during remedial activities. These ARARs set limits on concentrations of specific hazardous substances, pollutants, and contaminants in the environment. Examples of this type of ARAR include state and federal drinking water standards.

- **Location-specific** ARARs set restrictions on certain types of activities based on site characteristics. Federal and state location-specific ARARs are restrictions placed on the concentration of a contaminant or the activities to be conducted because they are in a specific location. Examples of special locations possibly requiring ARARs may include floodplains, wetlands, historic places, and sensitive ecosystems or habitats.

- **Action-specific** ARARs are technology- or activity-based requirements that are triggered by the type of remedial activities under consideration. Examples of this type of ARAR are RCRA regulations for waste treatment, storage, or disposal.

EPA has evaluated and identified the ARARs for the selected remedy in accordance with CERCLA, the NCP, and EPA guidance, including the *CERCLA Compliance with Other Laws Manual, Part I (Interim Final),* OSWER Directive 9234.1-01 (EPA, 1988a) and *CERCLA Compliance with Other Laws Manual, Part II,* OSWER Directive 9234.1-02 (EPA, 1989).

11.1 Chemical-specific ARARs

The chemicals of potential concern for the PVOU are VOCs that were detected in ground water in the PVOU. Table 1 lists these VOCs and their chemical-specific ARARs.

11.1.1 Federal Drinking Water Standards

EPA has established MCLs, 40 CFR. Part 141, under the Safe Drinking Water Act (SDWA), 42 U.S.C. §§ 300f-j, to protect public health from contaminants that may be found in drinking water sources. MCLs are applicable at the tap for water that is delivered directly to 25 or more people or to 15 or more service connections.

Under the SDWA, EPA has also designated Maximum Contaminant Level Goals (MCLGs), 40 C.F.R. Part 141, which are health-based goals that may be more stringent than MCLs. MCLGs are set at levels, including an adequate margin of safety, where no known or anticipated adverse health effects would occur. MCLGs greater than zero are relevant and appropriate where multiple contaminants in ground water or multiple pathways of exposure present unacceptable health risks (EPA, 1988b). One chemical detected in the PVOU ground water, 1,1,2-trichloroethane, has an MCLG that is more stringent than its MCL.

Under Section 300.430(f)(5) of the NCP, remedial actions must generally attain MCLs and nonzero MCLGs if the contaminated water is a current or potential source of drinking water. The 1995 Water Quality Control Plan for the Los Angeles Region (Basin Plan)

designates all of the contaminated ground water in the PVOU as current and potential sources of drinking water. However, since this ROD selects an interim remedial action to contain contaminant migration, no final cleanup standards are established for the restoration of ground water. Final cleanup standards will be established in a Final ROD. For this Interim ROD, EPA has determined that the federal MCLs and nonzero MCLGs listed in Table 1 are ARARs for any ground water that is treated and used for domestic, municipal, industrial, or agricultural purposes, and for any ground water that is discharged to the environment. In addition, these MCLs and MCLGs are ARARs for currently uncontaminated ground water in the intermediate zone downgradient from the B7 Well Field Area (EPA, 1988a).

If treated ground water is to be delivered into a public water supply, all legal requirements for drinking water in existence at the time that the water is served will have to be met because EPA considers the service of water to the public to be an offsite activity.

11.1.2 California Drinking Water Standards

California has established state MCLs for sources of public drinking water, under the California Safe Drinking Water Act of 1976, Health and Safety Code (H&SC) §§ 4010.1 and 4026(c), California Code of Regulations (CCR) Title 22, §§ 64431 and 64444. Some state MCLs are more stringent than the corresponding federal MCLs. EPA has determined that the more stringent state MCLs are relevant and appropriate for the PVOU. There are also some chemicals that lack federal MCLs. Where state MCLs exist for chemicals that lack federal MCLs, EPA has determined that the state MCLs are relevant and appropriate for the PVOU. State MCLs apply to remedial actions in the PVOU in the same manner as federal MCLs. Table 1 identifies the state MCLs that are ARARs for this remedial action.

11.2 Location-specific ARARs

This ROD specifies performance criteria for the remedy. As such, the locations of remediation facilities (e.g., wells, treatment plant, and pipelines) are not specifically identified herein. Locations of remediation facilities will be determined during the remedial design, and will conform to the location-specific ARARs identified below.

11.2.1 Location Standards for TSD Facilities

California Code of Regulations, Title 22, Section 66264.18 establishes location standards for Hazardous Waste Treatment, Storage, and Disposal Facilities (TSDFs). Subsection 66264.18(a) prohibits the placement of TSDFs within 200 feet of a fault displaced during the Holocene epoch. Subsection 66264.18(b) requires that TSDFs located within a 100-year floodplain be capable of withstanding a 100-year flood. These standards are applicable to the construction of any new ground-water extraction and treatment facilities used as part of this remedial action.

11.2.2 Endangered Species Act

The Endangered Species Act, 15 U.S.C. §§ 1531-1544, and implementing regulations, 40 C.F.R. § 6.302(h), 50 C.F.R. Parts 17, 222 and 402, are applicable to any remedial actions that impact a proposed or listed threatened or endangered species or destroy or adversely

modify the critical habitat of a listed species. The Preliminary Baseline Risk Assessment for the PVOU identified native plant communities, wildlife, special-status species, and sensitive habitat within the general area of the PVOU. No endangered species are known or suspected to occur in the locations where remedial action facilities might be constructed. If, however, it appears during the implementation of the remedial action that construction activities or the discharge of treated ground water might adversely affect a proposed or listed species, EPA will consult with the U.S. Fish and Wildlife Service (FWS) in accordance with 50 CFR Part 402 and ensure that regulatory requirements are followed so that adverse impacts are avoided or mitigated.

11.2.3 California Fish and Game Code

California Fish and Game Code sections 2080, 5650(a), (b), and (f), 12015, and 12016 prohibit the discharge of harmful quantities of hazardous materials into places that may deleteriously affect fish, wildlife, or plant life. These provisions are applicable if the remedial action will result in the discharge of treated ground water to surface waters.

11.2.4 Archaeological and Historic Preservation Act

This statute and implementing regulations, 16 U.S.C. § 469, 40 C.F.R. Part 6.301(c), establish requirements for the evaluation and preservation of historical and archaeological data that may be destroyed through alteration of terrain as a result of a federal construction project or a federally licensed activity or program. The only known site of historical interest in the PVOU is the Workman and Temple Family Homestead Museum, located at 15415 Don Julian Road (a short distance north of cluster well MW6-6). These requirements are applicable if the remedial action will interfere with this facility.

11.2.5 Historic Sites, Buildings, and Antiquities Act

The Historic Sites, Buildings, and Antiquities Act, 16 U.S.C. §§ 461-467, 40 C.F.R. Part 6.301(a), requires federal agencies to consider the existence and location of landmarks on the National Registry of Natural Landmarks to avoid undesirable impacts on such landmarks. The remedial action is not anticipated to affect any of the facilities regulated under the act. However, during preliminary design, a complete review will be made of impacted areas.

11.3 Action-specific ARARs

11.3.1 Local Air Quality Management

One VOC treatment technology that may be used is air stripping. Air emissions from air strippers are regulated by the California Air Resources Board, which implements the federal Clean Air Act (CAA), as well as the air pollution control requirements of the California H&SC, through local air quality management districts. Local districts may impose additional regulations to address local air emission concerns. The local air district for the PVOU is the South Coast Air Quality Management District (SCAQMD). The SCAQMD has adopted several rules that are ARARs for air stripper emissions and construction activities.

SCAQMD Regulation XIII, comprising Rules 1301 through 1313, establishes new source review requirements. Rule 1303 requires that all new sources of air pollution in the district use best available control technology (BACT) and meet appropriate offset requirements. Emissions offsets are required for all new sources that emit in excess of one pound per day.

SCAQMD Rule 1401 requires that best available control technology for toxics (T-BACT) be employed for new stationary operating equipment, so that the cumulative carcinogenic impact from air toxics does not exceed the maximum individual cancer risk limit of 10 in 1 million (1×10^{-5}). Many of the contaminants found in the PVOU ground water are air toxics subject to Rule 1401.

SCAQMD Rules 401 through 403 are also ARARs for construction and operation of remedial action facilities. SCAQMD Rule 401 limits visible emissions from a point source. Rule 402 prohibits discharge of material that is odorous or causes injury, nuisance, or annoyance to the public. Rule 403 limits downwind particulate concentrations.

11.3.2 Federal Clean Water Act and California Porter-Cologne Water Quality Act

California's Porter-Cologne Water Quality Act incorporates the requirements of the federal Clean Water Act (CWA) and implements additional standards and requirements for surface and ground waters of the state.

Water Quality Control Plan for the Los Angeles Region (Basin Plan)

The RWQCB formulates and enforces water quality standards through a Basin Plan. The Basin Plan identifies the beneficial uses of surface and ground waters in the San Gabriel River watershed and establishes water quality objectives necessary to protect these beneficial uses. Water quality objectives impose limitations on receiving waters, rather than discharges, and are applicable to any water body that receives discharge from remedial activities in the PVOU.

The selected remedial action may result in the discharge of treated ground water to Puente Creek immediately upstream from San Jose Creek, which is tributary to the San Gabriel River. Table 2-1 of the Basin Plan identifies the following beneficial uses for San Jose Creek:

- Municipal and domestic supply (potential beneficial use)
- Ground-water recharge (intermittent beneficial use)
- Water contact recreation (potential beneficial use)
- Noncontact water recreation (intermittent beneficial use)
- Warm fresh water habitat (intermittent beneficial use)
- Wildlife habitat (existing beneficial use)

The Basin Plan identifies the same beneficial uses for the segment of the San Gabriel River below the confluence with San Jose Creek.

Since municipal and domestic water supply is a potential beneficial use of these surface waters, the MCLs listed in Table 1 are applicable as water quality objectives for San Jose

Creek. In addition, the following water quality objectives from Table 3-8 of the Basin Plan are ARARs for San Jose Creek and the relevant segment of the San Gabriel River:

- Total Dissolved Solids: 750 mg/L
- Sulfate: 300 mg/L
- Chloride: 150 mg/L
- Boron: 1.0 mg/L
- Nitrogen (NO3-N + NO2-N): 8 mg/L

The Basin Plan also establishes water quality objectives for ground water in the Puente and Main San Gabriel Basins (Table 3-10). These water quality objectives are applicable to any discharge that impacts ground water. However, if the selected remedy results in discharge to surface waters, it is expected to have a negligible effect on ground water (Camp, Dresser and McKee Inc., 1988).

State Water Resources Control Board Resolution 68-16

The Basin Plan also incorporates the State Water Resources Control Board (SWRCB) policy "Statement of Policy with Respect to Maintaining High Water Quality in California" (Resolution 68-16). Resolution 68-16 requires that existing water quality be maintained unless it is demonstrated that a change will benefit the people of California, will not unreasonably affect present or potential uses, and will not result in water quality less than prescribed by other state policies. Any activity that may increase the volume or concentration of a waste discharged to surface or ground water is required to use the "best practicable treatment or control."

Resolution 68-16 is applicable to discharges of treated ground water. The RWQCB requested that the PVSC evaluate the potential impact of nitrates and TDS contained in treated ground water on receiving waters and investigate alternative discharge options. The PVSC complied with this request and prepared a report, *Puente Valley Operable Unit Discharge Options Study Report* (Camp, Dresser & McKee Inc., 1998), which concluded that any discharges from the remedial action will not significantly impact receiving waters or their beneficial uses. The report also identified substantial costs associated with treatment of nitrates and TDS and failed to identify significant reliable alternative uses for nonpotable treated ground water. The RWQCB has determined that the selected remedy will comply with this ARAR as long as discharges to surface water are monitored and the estimated impacts on receiving waters are correct (*Consideration of Approval of a Resolution Supporting U. S. EPA's Proposed Plan for the Puente Valley Superfund Cleanup. Resolution 98-016, RWQCB, September 14, 1998).*

State Water Resources Control Board Resolution 92-49

Subsection III.G of the SWRCB's "Policies and Procedures for Investigation and Cleanup and Abatement of Discharges under Water Code Section 13304" (Resolution 92-49) requires attainment of background water quality or, if background levels cannot be restored, the best quality of water that is reasonable. Resolution 92-49 is not an ARAR because this is an interim remedial action to contain the spread of contamination, rather than a final action to restore ground water in the PVOU.

11.3.3 Standards Applicable to CERCLA Section 104(b) Discharges to Surface Waters

Site investigation activities undertaken pursuant to CERCLA § 104(b) are considered to be removal actions. It is EPA policy that removal actions "comply with ARARs to the extent practicable, considering the exigencies of the circumstances." (55 Fed. Reg. 8756).

It is possible that certain site investigation activities will take place during remedial design, which will result in temporary high-flow, high-volume discharges of contaminated ground water (e.g., discharges from aquifer testing and spinner logging / depth-specific sampling of water supply wells). EPA has considered the best available technology economically achievable (BAT) for treatment and disposal of these discharges. The four disposal options that EPA considered are: (1) discharge to an existing drinking water distribution system, (2) onsite storage and disposal at a Resource Conservation and Recovery act (RCRA)-approved hazardous waste facility, (3) discharge to a sanitary sewer for treatment at a wastewater treatment plant, and (4) onsite treatment and discharge to surface water channels. EPA has concluded that compliance with chemical-specific ARARs is not practicable, considering the exigencies of the circumstances, for many temporary high-flow, high-volume discharges.

EPA has determined that compliance with chemical-specific ARARs is practicable and necessary for CERCLA § 104(b) activities that do not result in temporary high-flow, high-volume discharges. EPA will determine the application of chemical-specific ARARs to CERCLA § 104(b) activities on a case-by-case basis. Where practicable, these discharges must comply with ARARs.

11.3.4 California Hazardous Waste Management Program

The federal RCRA establishes requirements for the management and disposal of hazardous wastes. In lieu of the federal RCRA program, the State of California is authorized to enforce its Hazardous Waste Control Act, and implement regulations (CCR Title 22, Division 4.5), subject to the authority retained by EPA in accordance with the Hazardous and Solid Waste Amendments of 1984 (HSWA). California is responsible for permitting treatment, storage, and disposal facilities within its borders and carrying out other aspects of the RCRA program. Some of the Title 22 regulations are applicable to the generation and disposal of hazardous wastes in the PVOU.

Hazardous Waste Generator Requirements

CCR Title 22 establishes requirements applicable to generators of hazardous waste. Implementation of the remedial action may generate hazardous waste as a result of ground-water monitoring and well installation (e.g., contaminated soil and ground water and used personal protective equipment). Hazardous waste may also be generated as a result of ground-water treatment to remove VOCs (e.g., spent carbon). These requirements are applicable to remedial actions in the PVOU.

The preamble to the NCP clarifies that when noncontiguous facilities are treated as one site, the movement of hazardous waste from one facility to another is subject to RCRA manifest requirements (55 Fed. Reg. 8691). Manifest requirements are ARARs in the event that the remedial action involve multiple water treatment units at different locations and require the movement of hazardous wastes (e.g., spent carbon) between these locations.

Land Disposal Restrictions

CCR Title 22 defines hazardous wastes that cannot be disposed of to land without treatment. Land disposal requirements are applicable to the disposal of spent carbon generated during the treatment of ground water for removal of VOCs, if carbon adsorption is used, and the disposal of residuals associated with ground-water monitoring and well installation (e.g., contaminated soil and ground water, used personal protective equipment).

Hazardous Waste TSD Facility Requirements

CCR Title 22, Division 4.5, Chapter 14, specifies Hazardous Waste TSDF requirements that regulate the design, construction, operation, and closure of RCRA-permitted TSDFs. Since the contaminated ground water is sufficiently similar to RCRA hazardous wastes, Title 22 TSDF requirements are relevant and appropriate for the design, construction, operation, and closure of any ground-water treatment systems. The Title 22 ARARs include the substantive requirements of the following provisions:

- Section 66264.14: Security Requirements
- Section 66264.25: Seismic and Precipitation Standards
- Section 66264.94: Ground Water Protection Standards
- Sections 66264.111-115: Closure of Treatment Units
- Sections 66264.170-178: Use and Management of Containers
- Sections 66264.600-603: Standards for Miscellaneous Treatment Units

11.4 ARARs Waivers

This remedial action is an interim measure to contain contaminant migration. EPA, therefore, has not established chemical-specific ARARs for restoration of the contaminated portions of the PVOU. These ARARs will be addressed in the ROD for the PVOU.

12 Documentation of Significant Changes

EPA presented the Proposed Plan for this interim action for public comment in January 1998. The Proposed Plan identified Alternative 3 as the preferred remedy and proposed that it be implemented through a performance-based approach. Alternative 3 includes ground-water extraction, containment, and treatment of contaminated ground water, and monitoring to ensure compliance with RAOs. EPA has reviewed all written and verbal comments submitted during the public comment period. Upon review of these comments, it was determined that no significant changes to the selected remedy, as presented in the Proposed Plan, were necessary.

13 Statutory Determinations

As required under Section 121 of CERCLA, EPA must select remedies that are protective of human health and the environment, comply with applicable or relevant and appropriate requirements (unless a statutory waiver is justified), are cost-effective, and utilize permanent solutions and alternative treatment technologies or resource recovery technologies to the maximum extent practicable. In addition, CERCLA includes a preference for remedies that employs treatment that permanently and significantly reduces the volume, toxicity, or mobility of hazardous wastes. The following sections discuss how the selected remedy meets these statutory requirements.

13.1 Protection of Human Health and the Environment

The selected remedy will protect human health and the environment by limiting further downgradient and vertical migration of contaminated ground water and by removing significant contaminant mass from the aquifer. The remedy will reduce potential risks by decreasing the likelihood and magnitude of future exposure to contaminated ground water. Contaminant concentrations in the ground water in the areas to be addressed by the remedy are currently tens to thousands of times higher than acceptable levels. Available treatment technologies are technically feasible and proven effective in meeting ARARs for VOCs in the treated ground water and air. Implementation of the remedy will not pose unacceptable short-term risks. In addition, no adverse cross-media impacts are expected.

13.2 Compliance with ARARs

The selected remedy shall comply with all ARARs, which are listed in Section 11 of this ROD. No ARARs waivers are expected to be needed. Because this is an interim action, EPA has not established chemical-specific ARARs for restoration of the ground water.

13.3 Cost-Effectiveness

EPA believes the selected remedy is cost-effective and uses permanent solutions and treatment technologies to the maximum extent practicable. The selected remedy will reduce the mobility of the contaminants in the aquifer and will permanently reduce the volume of contamination by limiting the migration of contaminants and removing contaminant mass.

13.4 Community Acceptance

Several commenters expressed support for EPA's proposed remedy. Some commenters did not believe that the remedy was necessary or supported by the information that has been collected to date. EPA has determined that the preferred alternative presented in the Proposed Plan represents the most appropriate remedy for the ROD site. None of the comments suggested a change to the overall remedy that EPA selected. The comments

received during the public comment period, along with EPA's responses, are presented in Part II of this ROD.

13.5 Utilization of Permanent Solutions and Alternative Treatment Technologies to the Maximum Extent

The selected remedy will include ground-water extraction and treatment for removal of VOCs to meet the performance criteria specified in this ROD. The selected remedy, therefore, is expected to use permanent solutions and alternative treatment technologies to the maximum extent practicable.

13.6 Preference for Treatment as a Principal Element

The selected remedy will include ground-water treatment as a principal element of the remedy to meet the Performance Criteria.

13.7 Five-Year Reviews

Because the remedy will result in hazardous substances remaining onsite above health-based levels, EPA shall conduct a review of the remedy, pursuant to CERCLA Section 121, 42 U.S.C. Section 9621, at least once every 5 years after commencement of remedial action. The review will assess whether the remedy continues to provide adequate protection of human health and the environment. If it is determined that the remedy is no longer protecting human health and the environment, then modifications to the remedy will be evaluated and implemented as necessary.

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Tables

Table 1
ARARs for Chemicals of Potential Concern

Compound	ARAR (µg/L)	Source
1,1-Dichloroethane	***5***	***California MCL***
1,1-Dichloroethene	***6***	***California MCL***
1,1,1-Trichloroethane	***200***	***Federal MCL***
1,1,2-Trichloro-1,2,2-trifluoroethane	1,200	California MCL
1,1,2-Trichloroethane	3	Federal MCLG
1,1,2,2-Tetrachloroethane	1	California MCL
1,2-Dichlorobenzene	600	Federal MCL
1,2-Dichloroethane	***0.5***	***California MCL***
1,2-Dichloroethene (total)	***6[1]***	***California MCL***
1,2-Dichloropropane	5	Federal MCL
1,2,4-Trichlorobenzene	70	Federal MCL
1,2,4-Trimethylbenzene	-	-
1,3-Dichlorobenzene	600	Federal MCL
1,3 B Dichloropropene	0.5	California MCL
1,3,5-Trimethylbenzene	-	-
1,4-Dichlorobenzene	5	California MCL
2-Propanone	-	-
Benzene	1	California MCL
bis(2-Ethylhexyl)phthalate	4	California MCL
Bromochloromethane	***-***	***-***
Bromodichloromethane[2]	100	Federal MCL
Bromoform[2]	100	Federal MCL
Bromomethane	-	-
n-Butylbenzene	-	-
sec-Butylbenzene	-	-
tert-Butylbenzene	-	-
Carbon Disulfide	-	-
Carbon Tetrachloride	***0.5***	***California MCL***
Chlorobenzene	70	California MCL
Chloroethane	-	-
Chloroform[2]	***100***	***Federal MCL***
cis-1,2-Dichloroethene	6	California MCL
cis-1,3-Dichloropropane	-	-
Dibromochloromethane[2]	100	Federal MCL
Dibromochloropropane	0.2	Federal MCL
Di-n-butylphthalate	-	-
Dichlorofluoromethane	C	C
Ethylbenzene	700	Federal MCL
Isopropyl alcohol	-	-
Isopropyl benzene	-	-
Methylene Chloride	5	Federal MCL
Naphthalene	-	-
Styrene	100	Federal MCL

Table 1
ARARs for Chemicals of Potential Concern

Compound	ARAR (µg/L)	Source
Tetrachloroethene	***5***	***Federal MCL***
Total petroleum hydrocarbons	-	-
Total petroleum hydrocarbons-volatiles	-	-
trans-1,2-Dichloroethene	10	California MCL
trans-1,3-Dichloropropane	-	-
Trichloroethylene	***5***	***Federal MCL***
Trichlorofluoromethane	***150***	***California MCL***
Toluene	***150***	***California MCL***
Vinyl Chloride	0.5	California MCL
m,p-Xylene[3]	-	-
o-Xylene[3]	-	-
Xylenes, total	***1,750***	***California MCL***

[1]Value for the cis-isomer; value for trans-isomer is 10 µg/L.

[2]These chemicals are trihalomethanes (THMs); the MCL listed is for all four THMs: chloroform, bromodichloromethane, dibromochloromethane, and bromoform.

[3]Value for total xylenes is 10,000 µg/L; no values are provided for individual isomers.

Notes: - indicates "no MCL has been established or proposed."

Bold/Italicized text indicates compounds detected in groundwater during RI (PVSC monitoring wells or Suburban Water Systems wells).

Table 2
Estimated Total Noncancer Hazard Index from Domestic Use of Groundwater
Puente Valley Operable Unit

Wells	Average Exposure		Reasonable Maximum Exposure		Major Chemical Contributors
	Ingestion	Inhalation	Ingestion	Inhalation	
Production Well 08000077	0.03	0.03	0.03	0.03	1,1-Dichloroethene, Trichloroethene
Production Well 98000068	0.07	0.07	0.09	0.09	Tetrachloroethene, Trichloroethene
Production Well 98000108	0.2	0.2	0.2	0.2	1,1-Dichloroethene, Trichloroethene
Well Group 1	0.6	0.6	0.6	0.6	1,1-Dichloroethene, Trichloroethene
Well Group 2	1	1	2	2	1,1-Dichloroethene, 2-Propanone
Well Group 3	40	30	60	60	1,1-Dichloroethene, Trichloroethene
Well Group 4	2	2	2	2	Tetrachloroethene, Trichloroethene
Well Group 5	20	20	40	40	Methylene Chloride, 2-Propanone, Trichloroethene
Well Group 6	0.9	0.9	1	1	Tetrachloroethene, Trichloroethene
Well Group 7	1	1	2	2	Tetrachloroethene, Trichloroethene
Well Group 8	0.4	0.4	0.5	0.5	1,1-Dichloroethene, Trichloroethene

Table 3
Estimated Total Excess Lifetime Cancer Risk from Domestic Use of Groundwater
Puente Valley Operable Unit

Wells	Average Exposure		Reasonable Maximum Exposure		Major Chemical Contributors
	Ingestion	Inhalation	Ingestion	Inhalation	
Production Well 08000077	$5x10^{-7}$	$7x10^{-8}$	$2x10^{-6}$	$3x10^{-7}$	Tetrachloroethene
Production Well 98000068	$3x10^{-6}$	$2x10^{-7}$	$1x10^{-5}$	$7x10^{-7}$	Tetrachloroethene, Trichloroethene
Production Well 98000108	$4x10^{-6}$	$5x10^{-7}$	$2x10^{-5}$	$2x10^{-6}$	Tetrachloroethene, Trichloroethene
Well Group 1	$4x10^{-6}$	$7x10^{-7}$	$1x10^{-5}$	$2x10^{-6}$	Tetrachloroethene, Trichloroethene
Well Group 2	$4x10^{-5}$	$8x10^{-6}$	$1x10^{-4}$	$3x10^{-5}$	1,4-Dichlorobenzene, Tetrachloroethene, Vinyl Chloride
Well Group 3	$2x10^{-4}$	$1x10^{-4}$	$1x10^{-3}$	$7x10^{-4}$	1,2-Dichloroethane, Tetrachloroethene, Trichloroethene
Well Group 4	$1x10^{-4}$	$6x10^{-6}$	$4x10^{-4}$	$3x10^{-5}$	Tetrachloroethene, Vinyl Chloride
Well Group 5	$4x10^{-4}$	$2x10^{-4}$	$3x10^{-3}$	$2x10^{-3}$	1,2-Dichloroethane, Methylene Chloride, Trichloroethene
Well Group 6	$4x10^{-5}$	$4x10^{-6}$	$2x10^{-4}$	$2x10^{-5}$	Tetrachloroethene, Trichloroethene
Well Group 7	$6x10^{-5}$	$2x10^{-6}$	$4x10^{-4}$	$2x10^{-5}$	Tetrachloroethene
Well Group 8	$4x10^{-6}$	$2x10^{-6}$	$2x10^{-5}$	$8x10^{-6}$	Tetrachloroethene, Trichloroethene

Table 4
Cost Comparison of Alternatives[1]
($1,000s)

Alternative	Capital Costs	Annual O&M Costs	Net Present Worth (30-years @ 5%)
2	$2,344	$360	$7,878
3	$8,276	$1,270	$27,798
4	$11,751	$1,634	$36,869

[1] Net Present Worth is based on discharge to San Jose Creek with treatment for VOCs only.

Table 5
B7 Production Wells
Puente Valley Operable Unit

Well Identification	Station Identification
152W1	01900337
147W1	01901596
105W1	01901608
134W1	01901623
150W1	01902519
147W3	08000077
B7E	08000122
B9	91901437
B11A	91901439
B7B	91901440
B7C	98000068
B7D	98000094
B9B	98000099
B11B	98000108

Figures

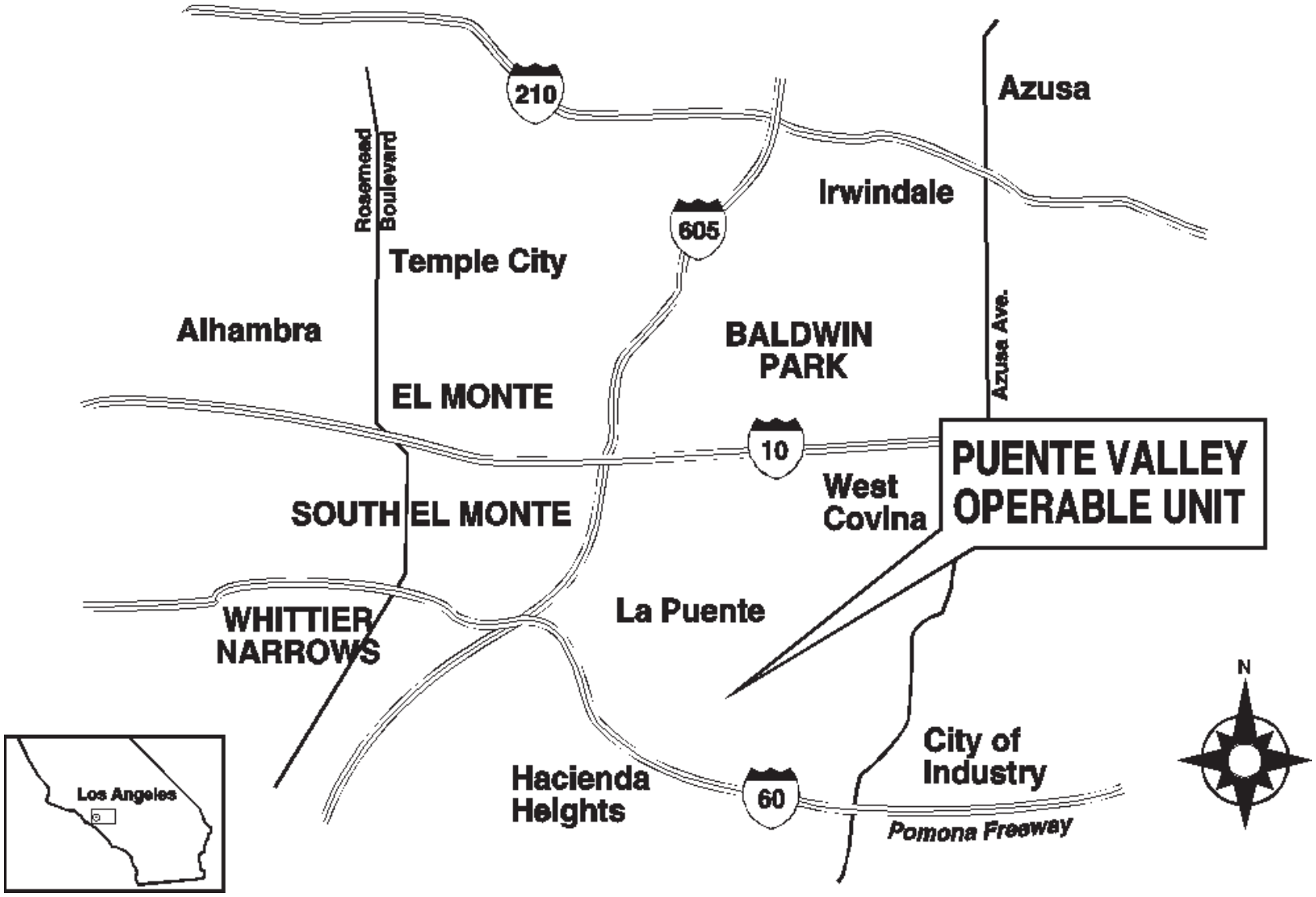


Figure 1
Vicinity Map
Puente Valley Operable Unit

CH2MHILL

SCO109991.09.01 map Fh 9/98

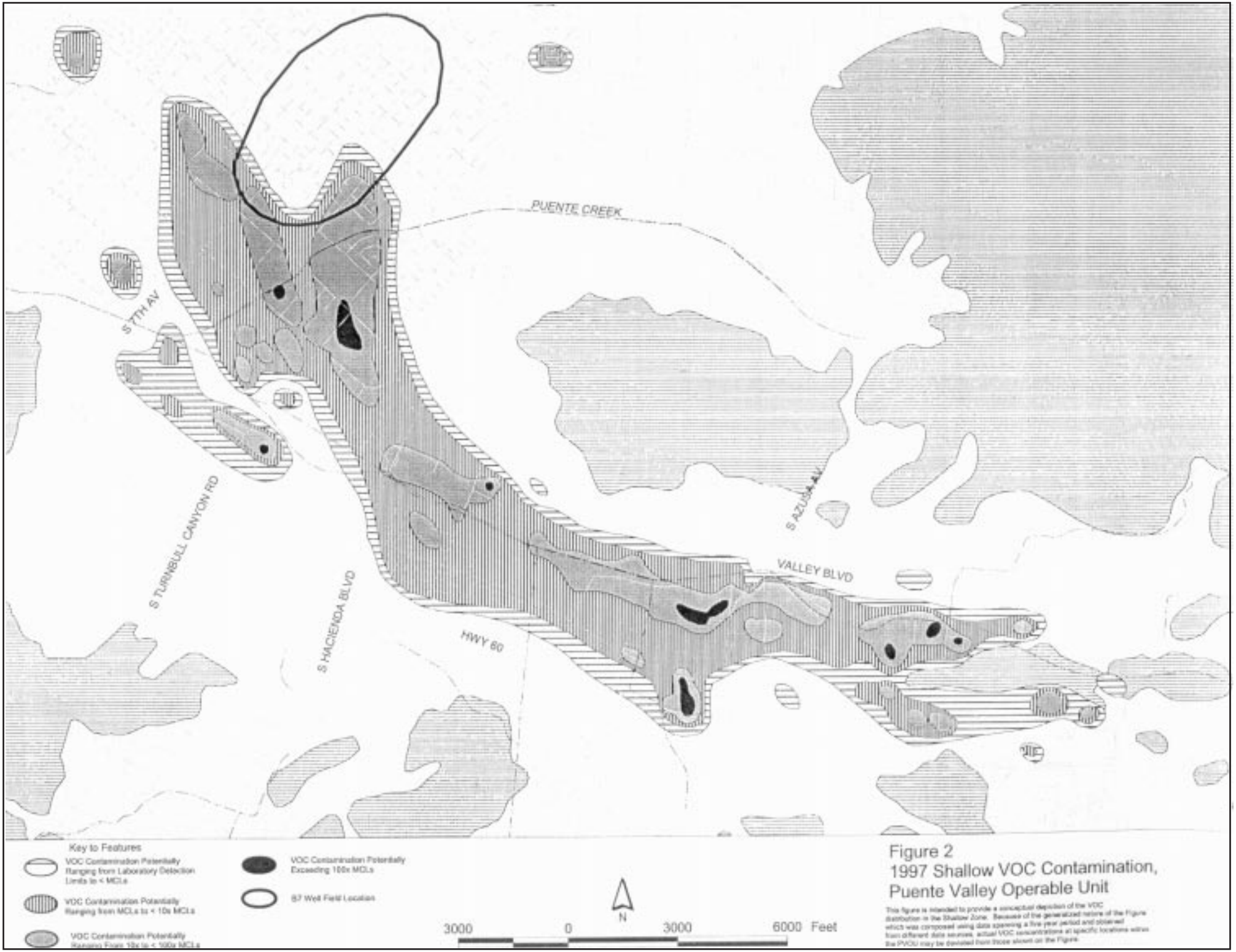


Figure 2
1997 Shallow VOC Contamination,
Puente Valley Operable Unit

This figure is intended to provide a conceptual depiction of the VOC distribution in the Shallow Zone. Because of the generalized nature of the Figure which was composed using data spanning a five-year period and obtained from different data sources, actual VOC concentrations at specific locations within the PVOU may be deviated from those shown on the Figure.

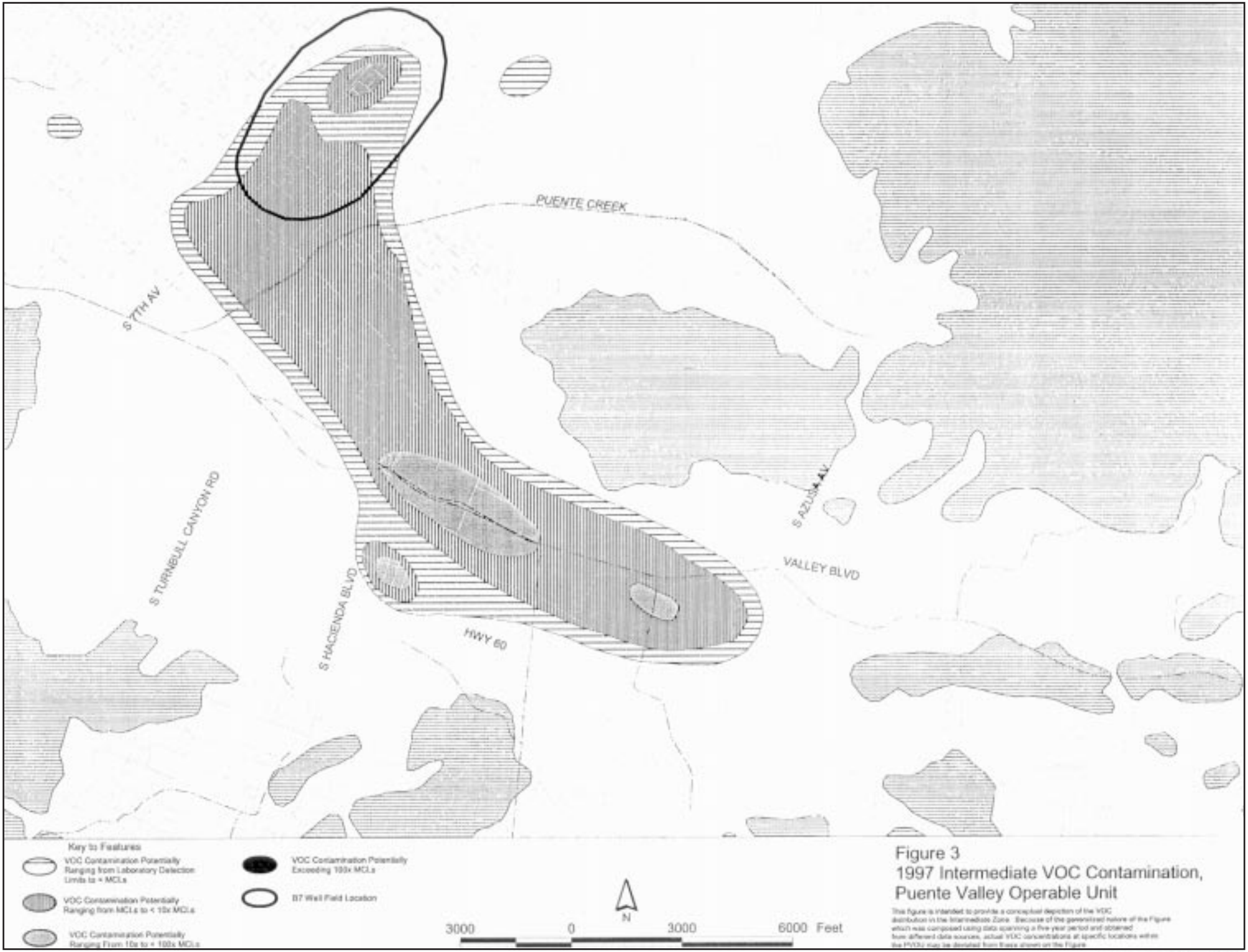
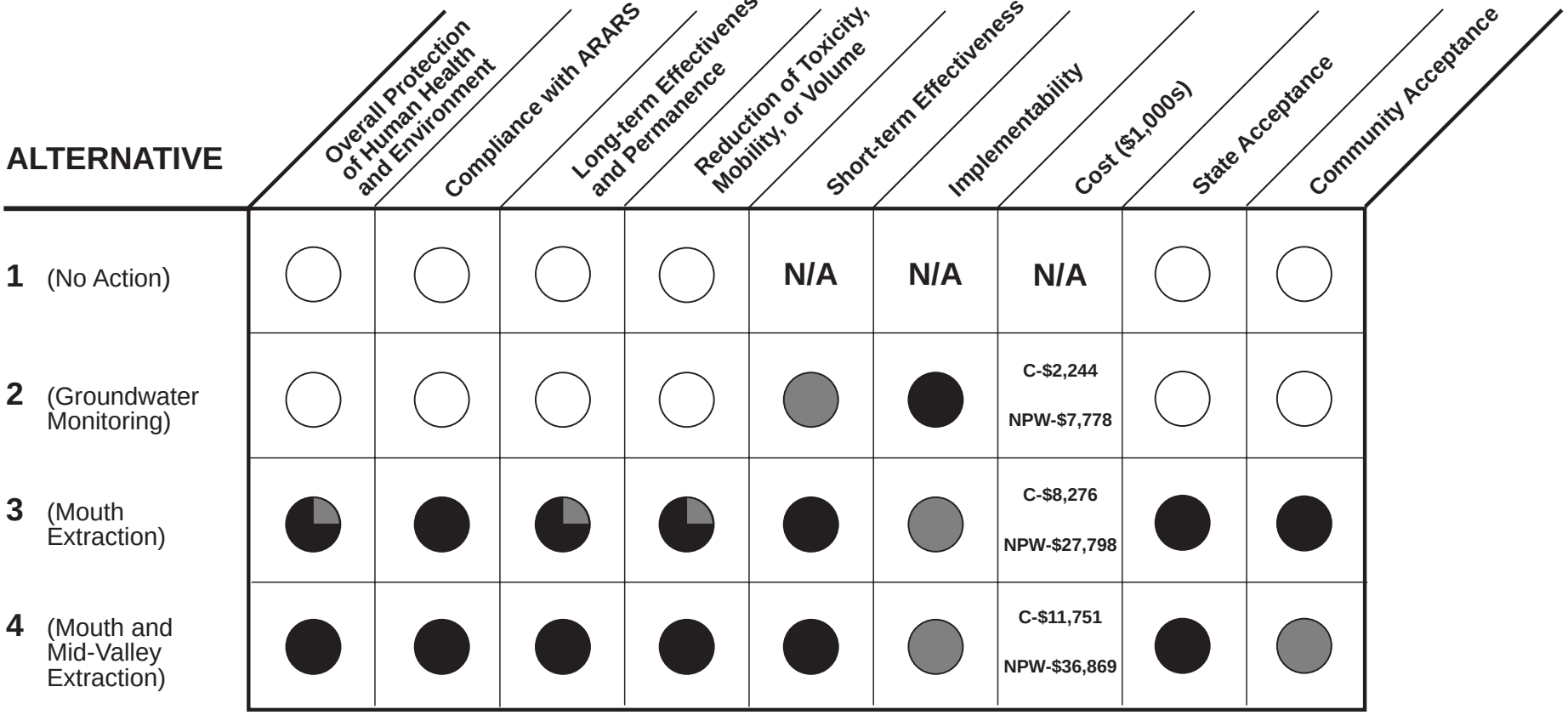


Figure 3
1997 Intermediate VOC Contamination,
Puente Valley Operable Unit

This figure is intended to provide a conceptual depiction of the VOC distribution in the Intermediate Zone. Because of the generalized nature of the Figure which was composed using data spanning a five year period and obtained from different data sources, actual VOC concentrations at specific locations within the PVOU may be deviated from those shown on this Figure.



N/A - Not Applicable; no actions implemented

Low

Medium

High

NPW - Net Present Worth, 5%; 30 yrs

Figure 4
Qualitative Criteria
Evaluation Matrix
Puente Valley Operable Unit

CH2MHILL

SCO109991.08.01 Matrix Fh 9/98

Part II
Responsiveness Summary

INTERIM RECORD OF DECISION

SAN GABRIEL VALLEY SUPERFUND SITE
PUENTE VALLEY OPERABLE UNIT
CITY OF INDUSTRY, CALIFORNIA

Volume 2

September 1998

United States Environmental Protection Agency
Region IX - San Francisco, California

Part II
Responsiveness Summary

This section presents the United States Environmental Protection Agency's (EPA's) responses to the written and oral comments received at the public meeting and during the public comment period. Comments were received from nine parties. This part of the Record of Decision (ROD) is divided into responses for each of the individuals or entities that provided written comments. Comments are expressed in italics; EPA's responses in plain text.

All of the oral questions and comments were responded to directly at the public meeting. These comments or questions and the associated responses are included in the transcript for the public meeting, attached as Appendix A to this Responsiveness Summary.

Responses to Written Comments

This section provides responses to written comments that EPA received during the public comment period. Comments were received from: City of Industry and the Industry Urban-Development Agency; Suburban Water Systems; Central Basin Water Association; Zevnick, Horton, Guibord, McGovern, Palmer & Fognani on behalf of Cleveland Pneumatic Corporation; San Gabriel Valley Water Company; Richard A. Sullivan; Royall K. Brown; Law Offices of Daniel Romano on behalf of Goe Engineering Company, Incorporated; and the Puente Valley Steering Committee.

Responses to Comments from City of Industry and Industry Urban-Development Agency (City), dated March 16, 1998

City Comment IA: *The performance standards for each extraction area (Proposed Plan, p. 7) are too vague. Those parties who undertake to implement the remedy cannot tell, from the standards as set out in the Proposed Plan, what volatile organic chemical ("VOC") contaminant readings at which locations at the mouth of the PVOU will trigger an obligation to do what kinds of additional remedial work.*

The performance criteria should be made more detailed in the ROD in at least the following ways.

1. Provide more guidance as to the locations of the ground-water monitoring wells used to measure the performance standards.

2. Specify the VOC levels to be used for the performance standards, and set them at no less than 10 times MCL.

Also, in the shallow zone, the group of cooperating potentially responsible parties organized as the Puente Valley Steering Committee (PVSC) has collected data over the last several months demonstrating that the plume of contaminated ground water in the shallow zone migrates as three subplumes near the mouth of the PVOU, where the Proposed Plan recommends placing the

shallow zone extraction wells. In detailing the remedy and performance standards for the shallow zone, the ROD should allow for a remedy that addresses each of the subplumes separately.

EPA's Response: The performance criteria included in this ROD contain detailed information on the location of ground-water wells that will be used to monitor compliance with the performance criteria in both the shallow and intermediate zones (see Section 10 of the ROD). The ROD also specifies the contaminant concentrations that must be maintained.

The selected remedial action for the PVOU is containment of contaminated ground water in the shallow and intermediate zones at the mouth of Puente Valley. The ROD incorporates a performance-based approach with specific performance criteria that must be met in order to achieve the remedial action objectives for the site. The performance-based approach allows flexibility in how the performance criteria are met. Therefore, if the responsible parties choose to address the shallow ground-water contamination as three separate plumes, they may do so as long as the chosen remedial action achieves containment of the contaminated ground water and complies with the performance criteria specified in the ROD.

City Comment IB: *The City and Agency approve of the option in USEPA's Proposed Plan to install new extraction wells or to use existing water company supply wells for the intermediate zone part of the superfund remedy. Proposed Plan, p. 7. Some operating standards for using water company wells in the superfund remedy would be a useful feature in the ROD. These standards should be formulated in consultation with the PVSC and the water companies that own the supply wells, and should take into account the current and likely future operating conditions of the supply wells in the context of the companies' overall supply systems*.

EPA's Response: As of the time of the ROD, the decision to use existing water supply wells in the intermediate zone portion of the remedy has not been made. If the responsible parties choose to utilize the existing water supply wells, appropriate standards and documentation will be necessary to ensure that the requirements of the remedy will be met. Specific details will need to be defined during the remedial design stage.

City Comment IC: *The City and Agency strongly support USEPA Region IX's position in favor of a waiver of the Waste Discharge Requirements (WDR) for total dissolved solids (TDS) and nitrates for ground water that is extracted and treated for VOC contamination as part of the PVOU superfund remedy. Proposed Plan, pp. 7-8. As the USEPA's Feasibility Study recounts, such a waiver will save those who implement the remedy almost $24 million dollars over the life of the project. Feasibility Study, Table 5-4.*

The City and Agency understand that the WDR is a requirement of a state agency, the California Regional Water Quality Control Board - Los Angeles Region (the "Regional Board"). The City and Agency already have sent a letter to the Regional Board showing their support for the waiver, a copy of said letter is attached as Exhibit A to these comments and incorporated into

them by reference.

In supporting the Regional Board's grant of this waiver, USEPA Region IX should take at least the following steps. First, because the Regional Board's WDR is based in part on provisions of the federal Clean Water Act, Region IX should inform the Regional Board that the TDS and nitrate waiver requested for the PVOU superfund remedy is consistent with the applicable requirements of the Clean Water Act and implementing regulations. Second, the ROD for the PVOU should make clear that USEPA Region IX does not consider a WDR for TDS and nitrates to be an ARAR for implementation of the superfund remedy in the operable unit. Third, USEPA Region IX should affirm in the ROD that the waiver of the WDR would be consistent with all past and present memoranda of understanding and funding agreements for the Puente Valley area between the Regional Board and USEPA Region IX.

EPA's Response: The selected remedy allows for the discharge to Puente Creek of treated shallow ground water containing nitrate and/or TDS in excess of water quality standards, so long as the discharge does not cause an exceedence of water quality standards in San Jose Creek, the San Gabriel River or the ground waters of the Puente and Main San Gabriel basins, and so long as the impacts of the nitrate and TDS on the receiving waters are consistent with the estimates set forth in the *Discharge Options Report* prepared by Camp Dresser & McKee, Inc. The *Discharge Options Report* found that the impact of the treated ground water discharge to receiving waters would be insignificant and that alternative disposal options for the treated shallow ground water were unavailable or very expensive.

On September 14, 1998, the Regional Board approved a resolution in support of EPA's selected remedy, including the potential discharge of treated shallow ground water. It is not necessary for the Regional Board to waive discharge requirements for nitrate and TDS. The water quality standards for nitrate and TDS in San Jose Creek, the San Gabriel River and the Puente and Main San Gabriel basin ground waters are ARARs for the selected remedy.

City Comment ID: *The Regional Board has several important facility specific "hot spot" cleanups under way, and has made substantial progress since the middle of last year in having property owners and tenants at those properties plan for, initiate, and continue these cleanups. Completing appropriate cleanups at "hot spot" sites within the next few years would remove major contamination from the area's ground water, should help reduce operating and maintenance costs for the regional PVOU superfund remedy, and could help reduce capital costs for the shallow zone component of the superfund remedy.*

Regional Administrator Felicia Marcus recognized the importance of earlier "hot spot" cleanups at superfund sites in her letter to Congressman Esteban Torres of March 24, 1997, a copy of which is attached to these comments as Exhibit B. The City and Agency approve of Region IX's commitment to encourage the Regional Board to pursue these "hot spot" cleanups in its memo to the National Remedy Review Board of December 30, 1997. The City and Agency urge USEPA Region IX to reaffirm this commitment, and to provide meaningful detail about how

Region IX will fulfill it, in the ROD.

EPA's Response: EPA recognizes the positive impact site-specific cleanups being conducted under the supervision of the RWQCB by individual facilities have on the quality of ground water in the PVOU. These cleanups, however, are outside the purview of the EPA regional ground-water investigation. EPA reiterates its support of the RWQCB's efforts and will continue to work with the RWQCB.

City Comment IE1: *The City believes that the Proposed Plan as developed in the Feasibility Study as Alternative 3 is justified as a means of containing the existing contamination in the PVOU at about the point of its current migration to the west and northwest, and to reduce substantially its mass over the next several years. The Proposed Plan, however, contains several features that exaggerate or inaccurately portray the real threat of the existing contamination, both to public health and to ground water resources in and around the San Gabriel Basin. Four of the more important of these features are described in this subsection.*

These inaccuracies and exaggerations ignore either the existing effective system of state and local controls on ground water use that protect the public, or the real data on the extent of existing contamination. Therefore, they should be corrected in the ROD.

1. <u>The Health Risk Assessment and the Unrealistic Assumption of Human Use of Contaminated Ground water</u>

In its Proposed Plan, USEPA Region IX continues to rely on a health risk assessment that includes human ingestion of VOC contaminated ground water in the Puente Valley. As the City has pointed out, this exposure pathway is highly unrealistic, because a combination of California law and the system of institutional controls on ground water use in the San Gabriel Valley effectively prevent anyone from drinking contaminated ground water. <u>See</u>, "Comments on the Feasibility Study of the Puente Valley Operable Unit...by the City of Industry...," (October, 1997), a copy of which accompanies these comments as Exhibit C and is incorporated by reference into them. In fact, USEPA Region IX itself has conceded that this exposure pathway is unrealistic because of these same state and local laws and controls. Feasibility Study, p. 3-7.

USEPA Region IX should eliminate this exposure pathway from the health risk assessment in the ROD. The resulting revised assessment will show a more realistic reduced risk to human health. At the same time, the City expects that the new assessment, and other evidence in the record, will still support a remedy, like the Proposed Plan, based on containing the western edge of the regional contamination before it reaches clean areas in the main San Gabriel basin, while allowing the currently contaminated ground water areas to the east in the Puente Valley to improve gradually.

EPA's Response: EPA conducted the Baseline Risk Assessment for the PVOU in accordance with CERCLA, the NCP and relevant EPA guidance. The goal of the risk assessment was to

perform a preliminary streamlined evaluation of the potential risks associated with contaminated ground water in the PVOU. To assess potential risks, EPA is required to evaluate the reasonable maximum exposure (RME) scenario, which is the "highest exposure that is reasonably expected to occur" under baseline conditions. Under baseline conditions there are no regulatory controls, such as the federal and state Safe Drinking Water Act regulations or the Rules and Regulations of the Main San Gabriel Basin Watermaster, on the use of contaminated ground water (55 Fed.Reg. 8709). In addition, these restrictions on access to ground waters do not eliminate the exposure pathway.

EPA's assumption that contaminated ground water in the PVOU could be used as drinking water is reasonable. All ground water in the PVOU is considered by the State of California to be either an existing or potential source of drinking water. Municipal water supply wells currently extract contaminated ground water from the intermediate zone at the mouth of the Puente Valley. Municipal water providers have previously produced drinking water from other contaminated areas in the PVOU and, in at least one instance, recently sought to install a drinking water well in a highly contaminated area in the PVOU. Therefore, under baseline conditions, human ingestion of contaminated ground water is a realistic exposure pathway. The results of the risk assessment support the need for an interim action to prevent further migration of contaminated ground water.

EPA agrees that other evidence in the record supports the selection of this remedy.

City Comment IE2: *The City and Agency concur with USEPA Region IX's objectives to protect currently uncontaminated areas and reduce impacts on the existing water supply wells at the northwestern edge of the regional VOC contamination. Proposed Plan, p. 4. The City and Agency do not concur with the goals of preventing mid-term movements of higher contamination into locations that now have lower contamination within the existing regional plumes of ground water contamination, and ask that Region IX omit these goals from the ROD.*

The City takes this position because local governments, water masters and water companies, applying the system of state and local controls noted above, already manage the currently contaminated areas without exposing any humans to contaminated ground water, and can continue to manage the same area without health risks to humans for the next few decades. Therefore, movement of some current hot spots several hundred yards down gradient into areas of lower contamination for a few years does not pose any realistic threat.

Ultimately, the City and Agency expect that the Proposed Plan will remove substantial amounts of VOCs, some of the currently contaminated ground water areas will become clean, and all such areas will show reduced VOC concentrations. This general, long-term progress should make the remedy outlined in the Proposed Plan consistent with keeping the PVOU available as a potential future water supply source over the longer term. Short-term improvements in contamination levels in every part of the PVOU in every year the superfund remedy operates are not necessary.

EPA's Response: The selected remedy does not attempt to control the movement of highly contaminated ground water into areas of lower contamination, except at the boundaries of the contaminant plumes at the mouth of Puente Valley. EPA will consider the need for and feasibility of addressing upgradient contamination when EPA evaluates potential final remedial actions for the PVOU.

City Comment IE3: *In describing the threat to the region's ground water resources, the Proposed Plan suggests that the contamination currently in the PVOU could flow approximately 6.5 miles through the main San Gabriel Basin and the Whittier Narrows into the Central Basin. Proposed Plan, p. 2. There is no support for this suggestion. In fact, the available evidence shows that there is a large area of clean ground water in the southern part of the main San Gabriel Basin between the western edge of the PVOU an contamination generated by facilities in South El Monte and El Monte located between the PVOU and the Whittier narrows. Therefore, this suggestion should not be included in the ROD.*

EPA's Response: In the absence of significant ground-water pumping by production wells within the San Gabriel Basin, in the vicinity of the mouth of the Puente Valley, ground water flowing out of the Puente Valley would eventually travel west and southwest towards Whittier Narrows. This natural flow direction is documented in historical maps of the potentiometric surface prior to significant pumping in the area. For the effect of ground water pumping near the mouth of the valley to be considered appropriate as a means of containing contamination, these wells would need to be considered part of the CERCLA remedy. This option is left open in the Record of Decision, as well as in the Proposed Plan. Unless pumping at these wells is considered part of the CERCLA remedy, it cannot be assumed that this pumping will continue indefinitely, thus preventing migration of Puente Valley contamination through Whittier Narrows, and into the Central Basin.

City Comment IE4: *The Proposed Plan identifies the presence of Dense Non-Aqueous Phase Liquids ("DNAPLS") as a "principal threat" in the PVOU. Proposed Plan, p. 4. This identification is surprising because the Remedial Investigation and Feasibility Study contain extensive data gathered over several years of ground water contamination in the PVOU by VOCs that are not DNAPLs, but no direct detection of any DNAPL compounds.*

While Region IX believes that some indirect evidence exists that "suggests the possible presence of DNAPLs," making this mere suggestion into a "principal threat" greatly exaggerates the real evidence of the DNAPL threat to ground water resources in the PVOU and nearby main San Gabriel Basin. Hence, it should not be included as a principal threat in the ROD. Instead, the ROD should rely on the real evidence of ground water contamination in the PVOU from VOCs that are not DNAPLs, and adopt a remedy, based on the Proposed Plan, that reasonably addresses this real VOC problem.

EPA's Response: For the VOC contamination in ground water at the PVOU, the concept of "principal threat" does not apply, therefore it is not included in this Interim ROD.

City Comment IF: *Neither the Proposed Plan nor the Feasibility Study include any assessment levied by the Main San Gabriel Basin Watermaster. Proposed Plan, pp. 7-8 and Feasibility Study, Tables 5-4 and 5-5. In the past, the Watermaster has levied several assessments. The following is a list of these assessments:*

Administrative
In-Lieu
Replacement Water
Make-up Water
Special.

The City and Agency recommend that the information about these costs be included in the ROD for an adopted remedy based on Alternative 3.

As an example, under current local ground water controls, replacement water charges could apply to both the intermediate and shallow zone components of Alternative 3. In the intermediate zone, if the project sponsors do not use the existing water supply wells and instead install their own system, they probably will treat this ground water, which is low in TDS and nitrates, for the VOCs, and then sell the clean water to a local company. This domestic use will require the sponsors to pay replacement charges, as well as some of the other Watermaster Assessments.

In the shallow zone, the project sponsors probably will discharge the ground water, which is high in TDS and nitrates into a lined portion of the San Jose Creek after they treat it for VOCs. Such a discharge may or may not be viewed as transport out of the Main San Gabriel Basin, depending in part on the area where this discharged water reaches unlined water bodies and recharges into ground water. It is uncertain as to which if any, of the Assessments would be levied by Watermaster under these circumstances.

Both the intermediate and shallow zone well fields, as described in the Proposed Plan, will extract ground water from the Main San Gabriel Basin. Therefore, the Main San Gabriel Basin Watermaster could impose the Replacement Water charge. This charge currently is $246.65 per acre-foot. It probably will increase gradually over the years, because it is indexed to Metropolitan Water District charges, which are projected to rise in the future.

EPA's Response: The comment correctly points out the need to consider replenishment costs if ground water is to be extracted. The PVSC's initial draft Feasibility Study did not incorporate these costs. EPA had subsequent conversations with the Main San Gabriel Basin Watermaster, and based on those conversations, replenishment water costs would not be incurred as long as the treated water was discharged/recharged back into the San Gabriel Basin. The selected remedy includes discharge of treated water into the surface waters within the PVOU and consequently within the San Gabriel Basin. Therefore, it is unlikely that replenishment water costs will be charged as a result of implementation of the selected remedy, and the Watermaster reiterated their support for implementing remedial actions that extract and treat contaminated ground water.

City Comment IIA: *USEPA Region IX should designate the final landowners and businesses in the Puente Valley whom it considers potentially responsible parties, and, therefore, liable for superfund response costs in the PVOU. Region IX should make these designations well before it issues the ROD, so that the designated parties have an opportunity to review the Proposed Plan, have communications with Region IX and the PVSC, and become integrated into negotiations between the PVSC and Region IX for an agreement on PVSC implementation of the remedy adopted in the ROD.*

Region IX bases its decisions in designating PRPs on information about individual sites gathered by the Regional Board. The City and the Agency understand that the Board's staff has finished its investigations on all but a handful of individual properties. At this point, the City and Agency believe that it is reasonable and fair for Region IX to make a decision about all individual properties, with the exception of properties where the responsible business or landowner has resisted Board requests or orders for investigatory work.

CERCLA itself directs USEPA to designate PRPs at a federal superfund site before it issues the ROD for the site. 42 U.S.C Section 9613 (k)(2). This directive establishes a fair procedure because it assures that the parties whom the USEPA believes should pay the superfund costs have a chance to review and comment on the proposed superfund remedy before USEPA adopts it. In addition, this statutory directive fosters implementability of the superfund remedy the ROD approves because a cooperating group of PRPs, like the PVSC here, is more likely to reach an agreement to design and build the superfund remedy quickly once it knows all the parties who are liable to pay for it.

Finally, designating all the PRPs before issuance of the ROD facilitates another USEPA policy, encouraging early cash out settlements for parties who contributed relatively small amounts of contamination to the regional pollution problem. Nationally, the USEPA has had a policy of encouraging early de minimis settlements since at least 1993. Early last year, the Regional Administrator promised members of Congress that Region IX would encourage similar early cash out settlements with smaller parties in the San Gabriel Basin superfund sites, including the PVOU. Exhibit B pp. 2-3.

As a practical matter, it is difficult for a cooperating PRP group to participate in de minimis settlement discussions until its members know with substantial certainty the size of the group of PRPs as a whole and the relative size of the subgroup of PRPs with sufficiently small liability shares to qualify for cash out settlements. Therefore, USEPA Region IX's failure to date to designate the final PRPs for the PVOU is creating a significant obstacle to realizing its own policy favoring early cash out settlements at superfund sites.

EPA's Response: This is an enforcement issue that does not affect EPA's consideration of remedial alternatives or selection of a remedial action. EPA expects to complete the identification of all PRPs for the PVOU within a few months of this ROD. It has taken a number of years for the Regional Board to investigate the hundreds of current and former industrial and

commercial facilities in the PVOU that may have used chlorinated solvents and for EPA and the Regional Board to identify those that are sources of ground water contamination and the entities that are legally responsible for the contamination.

Section 9613(k)(2) of CERCLA requires EPA to "make reasonable efforts to identify and notify potentially responsible parties as early as possible before selection of a response action." EPA is not required to postpone the selection of a response action until all PRPs are identified. EPA agrees that it is desirable to identify and notify all PRPs as soon as reasonably possible, and intends to do so for the PVOU.

City Comment IIB: *The PRPs must pay for both the superfund remedy, as outlined in the Proposed Plan, and for the USEPA's past investigatory and other response costs allocable to the PVOU. The Proposed Plan gives a cost estimate for the superfund remedy of $27.8 million. USEPA Region IX has not, however, given the PVSC or the public its past cost figure to date.*

Region IX should release this past cost figure, together with supporting documentation, as soon as possible, so that it may be considered well before the ROD is issued. Based on past cost figures for other superfund sites, PVOU's past costs may approach $10 million, or about one-third the cost of the entire superfund remedy. Uncertainty about such a significant cost figure creates an obvious practical obstacle for members of the PVSC and other PRPs interested in agreeing to fund the superfund remedy to negotiate agreement for the remedy with Region IX quickly. Moreover, since the past costs need to be factored into the cash out settlements, Region IX's failure to provide this figure discourages and delays negotiations over these types of settlements, thereby undermining USEPA's policy favoring early cash outs.

EPA's Response: This is an enforcement issue that does not affect EPA's consideration of remedial alternatives or selection of a remedial action. EPA intends to provide the PVOU PRPs with an estimate of past response costs and supporting documentation as soon as this information is available. EPA will take past costs into consideration if EPA settles with any PRPs.

Response to Suburban Water Systems (SWS) Comment, dated March 13, 1998

SWS Comment: *Suburban Water System supports the EPA Alternative 3, Ground-water control in the shallow and intermediate zones at the mouth of the valley and ground-water monitoring.*

EPA's Response: Comment noted.

Response to Central Basin Water Association (CBWA) Comment, dated February 12, 1998

CBWA Comment: *The Central Basin Water Association supports USEPA's Proposed Plan for the Puente Valley Operable Unit.*

The goal of CBWA with regard to activities at the San Gabriel Superfund Sites is to prevent the migration of any contaminants above the Maximum Contaminant Level past Whittier Narrows. Contamination from the Puente Basin has already migrated into the Main San Gabriel Ground water Basin, requiring that purveyors treat water from affected wells in order to meet drinking water standards. The Proposed Plan (Alternative 3 of the four alternatives outlined in the feasibility study) requires extractions and treatment as needed to meet performance criteria for containing contamination and preventing further migration. This active approach to remediation will help ensure that contamination does not continue to migrate further into the Main San Gabriel Basin and past Whittier Narrows into the Central Basin.

EPA's Response: Comment noted.

Responses to Comments from Zevnik, Horton, Guibord, McGovern, Palmer & Fognani on behalf of Cleveland Pneumatic Corporation (CPC), dated March 16, 1998

CPC Comment 1: *The EPA Proposed Plan is based on a Remedial Investigation and Feasibility Study ("RI/FS") which did not sufficiently determine the location of sources of the ground water contamination within the site to adequately select a remedy for the site. Specifically, the plan relies on ground water extraction in the mouth of the valley area for "containment" of contamination in the PVOU. However, an assessment of the available data, most of which is not presented, analysed or otherwise considered in the RI/FS, indicates that there are major sources of PCE and TCE contamination in the Puente Valley in areas upgradient of the mouth of the valley area. Implementation of the Proposed Plan might result in the significant movement of contamination from these highly contaminated source areas into the mouth of the valley area where extraction is to occur. Given the high concentration of contaminates, ground water extraction should only be considered at or near where these major sources are shown to be present in order to prevent migration into areas of lesser concentration during the extraction process at the mouth of the valley.*

EPA's Response: This comment refers to the presence of numerous areas of high VOC contamination or "hot spots" upgradient of the proposed remedial action. EPA acknowledges both the presence of these areas, as well as the need for these areas to be addressed through aggressive, site-specific remedial actions. EPA's Feasibility Study also notes that EPA fully expects and supports actions taken under the purview of the Regional Water Quality Control Board – LA Region (RWQCB), to address these local areas of high concentrations of contamination in ground water. The regional actions recommended in the proposed plan were developed assuming that facility-specific actions will continue. The specific actions taken at the mouth of Puente Valley should be designed in a manner that does not accelerate the spread of contamination from these hot spots.

CPC Comment 2: *The selected remedy for the PVOU does not appear to take into account the strong probability that the San Jose Creek could operate as a uninterrupted, highly permeable*

pathway for VOC migration from sources at the top of the valley to the mid-valley and mouth of the valley areas. This situation should be investigated further since it was not adequately addressed in the RI/FS for the site. If the San Jose Creek is a pathway, then the proposed plan should include ground water extraction along the creek.

EPA's Response: The potential for the San Jose Creek to "operate as a uninterrupted, highly permeable pathway for VOC migration" was extensively evaluated during the RI/FS process. After more than a year of sampling and analysis of migration through the creek, both in surface water and in the subdrain system, it was concluded that any contaminants migrating along the subdrain pathway would eventually be captured by remedial actions at the mouth of the valley. In addition, it was found that significant contaminant transport can only occur during "ideal" conditions, when the water table intersects the subdrain system for considerable distances. Volatilization and dilution of VOCs in the surface water occurs very quickly.

Response to Comments from the San Gabriel Valley Water Company (SGVWC), dated March 11, 1998

SGVWC Comments: *This letter supplements my statement at the public meeting held Wednesday, January 28, 1998, at La Puente High School concerning EPA's proposed plan to address ground water contamination at the Puente Valley Operable Unit ("PVOU").*

As I explained at the public meeting, San Gabriel Valley Water Company ("San Gabriel") strongly supports EPA's preferred alternative (which is Alternative 3 in the PVOU Final Feasibility Study Report). Among other things, that alternative favors ground water extractions at the B7 Well Field as part of the preferred remedial action. It also calls for the PRPs to negotiate directly with the water purveyors that operate wells in the B7 Well Field in order to make the existing water supply systems part of the selected remedy. (See generally PVOU Final Feasibility Study Report at p. 4-5.)

By letter dated October 30, 1997 to Ms. Eugenia Chow, U. S. EPA's Remedial Project Manager (copy attached), San Gabriel's President Michael L. Whitehead stated:

> *"San Gabriel is prepared to meet and confer with the EPA and Puente Valley Steering Committee to determine how San Gabriel's wells in the B7 Well Field or elsewhere can be integrated into the preferred remedial action."*

At the January 28 public meeting in La Puente, I reiterated that commitment.

In addition, Ms. Carol Williams, Executive Officer of the Main San Gabriel Basin Watermaster, and representatives from Suburban Water Systems, City of Industry, and the Central Basin Water Association all endorsed EPA's preferred alternative. Also, it is significant that representatives of the Puente Valley Steering Committee in their comments at the public meeting did not object to EPA's preferred alternative as it relates to the B7 Well Field. Indeed, no one at the January 28 public meeting opposed EPA's preferred alternative as it relates to the B7 Well Field.

EPA's preferred alternative is the product of an exhaustive process, including a remedial investigation and feasibility study, analysis by EPA's staff and by affected parties, and recommendation by EPA's Region IX and the National Remedy Review Board. Clearly EPA's preferred remedy has broad public support, and I am aware of no opposition to the preferred alternative as it relates to the B7 Well Field. Accordingly, EPA's preferred alternative should be adopted as the appropriate remedial action in Puente Valley.

EPA's Response: Comment noted.

Response to Comments from Richard A. Sullivan, dated February 12, 1998

Richard A. Sullivan Comment: *Thank you for the Region's January fact sheet which solicits comments from the public on your proposed plan for addressing ground-water contamination by volatile organic compounds (VOCs) in the Puente Valley. The fact sheet states "These Remedial Action Objectives (RAOs) reflect EPA's regulatory goal of restoring usable ground waters to their beneficial uses -- within a time frame that is reasonable, ---."*

Preferred Alternative 3 would provide hydraulic control to prevent migration of contamination in the shallow and intermediate zones beyond the mouth of Puente Valley, and would also rely on natural attenuation for rehabilitation of ground waters in the zones. Returning ground water of the 5-mile long VOC -contaminated plume in the shallow zone to its beneficial potable uses by Alternative 3 would take decades while the dense non-aqueous phase liquids (DNAPLs) would also continue to migrate downwards and worsen DNAPL contamination in the deeper intermediate zone plume.

A more expeditious approach to Alternative 3 would be to accelerate rehabilitation of ground waters in the shallow zone plume by utilizing those existing wells in the zone that are now closed down because of VOC contamination. Adaptive intermittent pumping rather than conventional constant pumping from the existing wells would further accelerate removal of DNAPLs from the shallow zone. The extracted contaminated ground waters would flow through a treatment plant and then into the community water distribution system. Choice of multiple small plants or a large plant would depend on pipeline costs to convey water for decontamination treatment and then distribution. Removal of DNAPLs from the intermediate zone at mid-valley (Alternative 4) could also be accelerated by adaptive intermittent pumping.

The adaptive intermittent pumping approach accelerates leaching of DNAPLs from the geologic microenvironment, and the technique is outlined in my article "Pump and Treat and Wait" published in Civil Engineering magazine of the American Society of Civil Engineers. A reprint of the article is enclosed. Implementation of the adaptive pumping approach is controlled by the observational method, which recognizes uncertainty in micro-geologic conditions and chemical behavior with resulting impact upon the rate of leaching. Enclosed is an outline application of the observational method.

The intent of my comments to Alternatives 3 & 4 of EPA's proposed plan is to convey some constructive suggestions that could save time and money in restoring ground waters at Puente Valley to their beneficial uses within a reasonable time frame.

EPA's Response: The reviewer refers to intermittent pumping and the observational method as tools that may enhance the effectiveness of the selected remedy. EPA concurs that these techniques should be considered during remedial design.

Response to Law Offices of Daniel Romano on behalf of Goe Engineering Company, Incorporated (Goe), dated March 16, 1998

Response to Goe comment 1: *In 1994, the EPA completed a baseline risk assessment to evaluate the potential health effects from exposure to contaminated ground water, and to determine if any remedial actions would be necessary to protect human health or the environment. As part of the risk assessment the EPA evaluated three scenarios:*

1. The potential for a current resident to be exposed to ground water through domestic use;

2. The potential for a future resident to be exposed to contamination in ground water through domestic use; and

3. The potential for current and future workers and residents to be exposed to contamination in ground water through transport of VOCs from ground water through the foundation of a building.

The EPA uses a "target risk range" of one person in ten thousand to one person in one million getting cancer from the contamination at the site. Risks that fall within or below this range are considered acceptable and generally do not require remediation, and risks greater than one in ten thousand warrant remediation.

The risk assessment of the first scenario, potential for a current resident to be exposed to ground water through domestic use, resulted in estimated excess lifetime cancer risks within the acceptable risk range. Even the estimated risks were overly conservative in that blending of ground water from several production wells and the current ground water treatment by water purveyors were not considered. Therefore, under the first scenario, no remedial action is warranted.

The risk assessment of the second scenario, potential for a future resident to be exposed to contamination in ground water through domestic uses, inexplicably resulted in a total estimated excess lifetime cancer risk of five in one thousand, which exceeds both the target risk range and risk to current residents. The risk assessment analysis assumed that future ground water production wells would be drilled/installed directly within eight areas or plumes that had ground water concentrations exceeding ten times the MCLs. This assumption is not only overly conservative, but unrealistic. The EPA has further assumed that ground water extracted by the water purveyor would not be treated prior to reaching any future consumers. This assumption in

also unrealistic in that it implies not only the conduct of an unreasonable act by the water purveyor, but to do so would also be illegal. We believe that a reevaluation of this exposure scenario should be conducted, and that the exposure risks to future residents should be at least as low as the exposure to current residents, if not lower.

The risk assessment for the third scenario, potential for current and future workers and residents to be exposed to contamination in ground water through transport of VOCs from ground water through the foundation of a building, determined that the estimated excess lifetime cancer risk to current and future workers/residents was within the target risk range. The EPA also determined that there is no threat to plants and wildlife from exposure to contaminated ground water.

Finally, the EPA considers that the principal threat identified in the PVOU is the possibility that Dense Non-Aqueous Phase Liquids ("DNAPLs") may be present in the ground water. However, DNAPLs have not been observed at any of the monitoring wells installed in the PVOU. We believe that if the possible presence of DNAPLs is suspected at a specific facility, confirmation and/or removal of this threat should be the responsibility of that specific facility. Even assuming that DNAPLs exist, regional ground water extraction in the PVOU, as proposed by the EPA, may actually remobilize any possibly existing DNAPL layer and adversely impact deeper uncontaminated aquifers.

EPA Response: This comment refers to overly conservative assumptions and the existence of institutional controls as a mechanism for preventing human exposure to contaminated ground water, and the recommendation that the baseline risk assessment be conducted with that assumption in place. EPA disagrees that the baseline risk assessment is the proper place to take institutional controls into account. The role of the baseline risk assessment is to address the risk associated with a site in the absence of any remedial action or control, including institutional controls. The baseline assessment is essentially an evaluation of the no-action alternative. Institutional controls, while not actively cleaning up the contamination at the site can control exposure and, therefore, are considered to be limited action alternatives. The effectiveness of the institutional controls in controlling risk may appropriately be considered in evaluating the effectiveness of a particular remedial alternative, but not as part of the baseline risk assessment.

For the VOC contamination in ground water at the PVOU, the concept of "principal threat" does not apply, therefore it is not included in this Interim ROD.

Goe Comment II: *The EPA considered several remedial alternatives to reduce the risk from potential exposure to the contaminated ground water. The considered alternatives included:*

1. *No action*
2. *Ground water monitoring of the shallow, intermediate and deep zones at the mouth of the Puente Valley and at mid-valley.*
3. *Ground water control in the shallow and intermediate zones at the mouth of the Puente Valley and ground water monitoring (the EPA's preferred alternative).*
4. *Ground water control in the shallow and intermediate zones at the mouth of the*

Puente Valley and in the intermediate zone a mid-valley and ground water monitoring.

The primary flaw in the EPA's evaluation/development of the above remedial alternatives is the fact that neither the current nor planned site-specific remedial actions being conducted within the PVOU have been taken into account. Throughout the PVOU, several facilities, under the purview of the RWQCB, have been taking and continue to take remedial actions to treat contaminated ground water beneath and/or downgradient of their respective facilities. As correctly described in the FS report:

> *"[t]hese activities have resulted in, and will continue to contribute to, a reduction in existing contamination. Moreover, some of the existing activities (e.g., at the BDP/Carrier site) may serve to reduce contaminant migration within portions of the PVOU."*

The BDP/Carrier site has operated a ground water extraction and treatment system since August 1986, presently pumping at a rate of approximately 500 gallons per minute (gpm). Other facilities currently conducting or planning to conduct, ground water extraction and treatment include the TRW/Monadnock, TRW/Benchmark, Spectrol Electronics, Ajax and the Lansco Die Casting facility.

In addition, source control actions to remediate VOCs within subsurface soils have been undertaken at several facilities, including the Goe/Physicians facility. The RAP for the Goe/Physicians facility has been approved by the RWQCB, and is currently being implemented and is designed to not only remove the soil contaminants but also remove any future threat to ground water from the site. Additional source control have been completed or planned at several other facilities, including: BDP/Carrier, TRW/Benchmark, TRW/Monadnock, Spectrol Electronics, Lansco Die Casting, Utility Trailer, and Acorn Engineering. The FS report itself indicates that "[t]he importance of these source-specific actions is that they have the potential to remove additional VOC mass from both ground water and the unsaturated zone."

We strongly believe that the remedial alternatives considered by the EPA are incomplete and intrinsically flawed because they do not consider the effects of the current and planned site-specific actions being taken to remediate both soil and ground water within the PVOU. The EPA has spent substantial efforts to perform ground water fate and transport models to predict VOC contamination plumes behavior in response to their proposed alternatives. The modelling effort did not take into consideration the negative effects that ground water extraction and treatment at the mouth of the Puente Valley would have on the site-specific ground water extraction and treatment systems being conducted within the valley. For example, EPA's proposed ground water extraction at the mouth of the valley would cause "hot spots" (areas of high VOC concentration), currently located beneath source sites, to migrate into less contaminated downgradient areas and away from the capture zone of existing site-specific ground water remediation systems. It is our opinion that these "hot spots" can best be remediated by the existing site-specific extraction systems. In addition, if DNAPL layers are present beneath any of these facilities, EPA's proposed ground water extraction program may remobilize the DNAPLs into less contaminated areas of the aquifer and/or deep aquifers.

EPA's Response: EPA recognizes that source control actions are occurring and agrees that these actions could reduce contaminant migration in portions of the PVOU. However, the data collected during and after the Remedial Investigation (RI) indicate that existing source control actions were not adequately containing contaminant migration. The PVSC specifically avoided the inclusion of parcel-specific source control actions in the development of remedial alternatives (See *Puente Valley Operable Unit Interim RI/FS Comment/Response Summary, Final Feasibility Summary*, Camp Dresser and McKee Inc. (July 1996), p. 12). The RI/FS therefore did not develop sufficient information for EPA to determine whether additional source control actions could be used as part of a CERCLA remedy to contain contaminant migration throughout the shallow and intermediate ground water. Nevertheless, if source control actions prove effective in controlling contaminant migration in portions of the PVOU, EPA's performance-based remedy would not require the responsible parties to develop additional unnecessary ground-water extraction facilities. EPA agrees that actions taken at the mouth of Puente Valley should be designed in a manner that does not accelerate the spread of contamination from these hot spots.

Goe Comment III: *Based upon the above facts, we believe that the EPA should develop a ground water model for the PVOU which takes into account consideration the effects that site-specific remedial actions will have in the overall reduction of VOC mass from both soil and ground water and to reduce contaminant migration. Such a realistic model would provide the necessary data to allow the EPA to consider new remedial alternatives that would effectively address the EPA's Remedial Action Objectives ("RAOs") for the PVOU.*

It is very likely that when the effects of site-specific remedial actions are properly evaluated, new cost-effective remedial alternatives could be developed which meet the EPA's RAOs for the Puente Valley. Therefore, Goe would recommend the continue evaluation of the existing site-specific remediation systems and their effect on the contaminant migration of the claimed deep-water aquifer plume, prior to the expenditure of nearly $30 million (or more) for the implementation of the EPA's proposed alternative. In the interim, and evan after a period of continued evaluation, there is no risk to human health because the water purveyors are required to treat the ground water prior to making it available to consumers.

The site-specific soil and ground water remediation systems should likely be effective in remediating the highly contaminated areas within the shallow ground water zone both in the mouth of the valley and at mid-valley locations. If, based upon the new ground water model, contaminant migration in the shallow zone at the mouth of the valley is not adequately contained, then re-injection of ground water treated by the site-specific treatment systems within the mouth of the valley (i.e., TRW/Benchmark site) could be incorporated at selected locations to properly contain the downgradient migration into water supply wells. Similarly, re-injection of ground water, treated by site-specific systems within the mid-valley area (i.e., BDP/Carrier), along Hacienda Boulevard into the intermediate zone should prevent the downgradient migration of VOCs in the intermediate zone into the mouth of the valley areas.

Similar remedial alternatives, which incorporate and compliment current site-specific

remediation systems, could be developed and implemented at significantly lower costs than EPA's preferred alternative.

EPA's Response: This comment refers to consideration of site-specific cleanups of "hot spot" contamination being conducted by individual facilities. See EPA responses to Goe Comment II above, and City comment 1D.

Response to Royall K. Brown Comments, dated March 12, 1998

Royall K. Brown Comment: *The EPAs Preferred Alternative #3 has two basic shortcomings. First it cost to [sic] much and there is a cheaper version of clean up that has not been presented to the public for comment. Second Alternative 3 does not provide for compensation to the water rate payers of Upper San Gabriel Basin who have has [sic] to pay for the clean up of water from Puente Valley Operable Unit before it is delivered to them by water retailers.*
Since the referenced maps show no pollution in the shallow zone of Puente Valley at the Sunset Drinking Water Wells (B7 Well Field) and there is VOC contamination in the Deep zone along N. Sunset I conclude the outflow from the shallow zone of the Puente Valley Operable unit is discharging by hydraulic pressure to the deep zone as a result of the heavy pumping of the Sunset Well Field as noted by the Puente Basin Watermaster 1994 and commented upon in the second paragraph of page 5-3 of the Final Remedial Investigation Report by the Puente Valley tecknical [sic] Committee and is image 266 of 283 in your Data Base. As long as Sunset Drinking Water Wells are heavily pumped it is my opinion that there is not threat that any contaminated water from the Puente Valley Operable Unit will get to Whittier Narrows and exit Upper Basin to contaminate the lower basins (Central and West).

Based upon the above noted conclusions I propose an improvement upon Alternative #3. This improvement is to provide an incentive for the Principle [sic] Responsible Parties (PRPs) to achieve a quick clean up of Puente Valley O,erable [sic] Unit to avoid the high cost of a centralized collection system at the Mouth of Puente Valley. I suggest the utilization of well head treatment. Inorder [sic] to correct for the shortcommings [sic] of Alternative #3, as noted above, the PRPs wil have to pay of [sic] all the past and future costs of cleaning up of drinking water wells in the N. Sunset Well Field. Next all of the PRPs at thier [sic] own properties will have to deater all contaminated extraction wells on thier [sic] sites on a weekly basis in all zones for as long as there is any contamination in Puente Valley.

If after a reasonable period of years the dewatering of the contaminated extraction wells by the PRPs does not prevent reoccurance [sic] of contaminations of the wells in the N. Sunset Well field, the EPA should then impose Alternative #3 as a corrective measure.

I must note there are low cost extraction methods at low yield contaminated extractions [sic] wells the PRPs could use; such as compressed air pumping with on site collections in tanks and transport by truck to treatment facilities. Using trucks instead of high cost collection with high sunk cost piping will greatly reduce the PRPs investment in corrective equipment that Alternative

#3 includes.

Next I need to point out that the current level of extractions by PRPs is not addequate [sic] to clean up the contamination. Image 48 of 283 of your data base from the tecknical [sic] committe notes the 1994-95 extraction of contaminated water was only 1067 acre-feet. This is inaddequate [sic] for a quick clean up of the shallow zone. The PRPs must expand thier [sic] efforts to extract contaminated water in the Puente Valley Operable Unit. A quick dewatering of the shallow zone will allow a natural infusion of clean water by natural processes. Clean water in the shallow zone will result in an inflow to the lower zones and evential [sic] dilution of the contamination in the deep zone that supplies water to the N. Sunset Drinking Water Well Field.

Also I not the heavy pumping of wells South of the 10 Freeway and East of the 605 Freeway has caused a pumping depression to occure [sic] in that area. The N. Sunset Well Field is only a protion [sic] of the historic extractions of water that constitute this pumping hole. As long as this pumping depression continues the threat of any Puente Valey polluted ground water getting to Whittier Narrows is eliminated as Puente Basin is a minor source of water to the main Upper San Gabriel River Basin.

EPA's Response: The reviewer notes a) the absence of mapped contamination in the shallow zone in the vicinity of the Sunset Drinking Water wells, and b) the effects of deep pumping on containing contamination. The lack of mapped contamination in this area may primarily reflect a lack of data from the shallow zone. The effects of deep pumping in the B7 well field are duly noted in the Feasibility Study. These wells may be considered part of a regional remedial action if the appropriate assurances can be made on their continued pumping. In the absence of such assurances, it cannot be assumed that this pumping will indefinitely prevent the migration of contamination away from the mouth of the Puente Valley.

Response to Glen E. Powell, CPM Comment, dated January 21, 1998

Glen E. Powell Comment: *Since the pollution of the San Gabriel Valley covers such a large area, 167 Square Miles, and has been polluted for such a long time, the solution by a Responsible Government should be as simple and fair to all concerned as possible. Therefore I am in favor of solution NO.3.*

This solution could be solved in the following manner, which has now been put into motion with our aging sewer problem, by assessing every property within this area. Trying to single out any small group for our present pollution problem is unfair and discriminatory, because of all the pollution caused by cesspools and septic tanks before the sewer system was installed. Another source was from all of the dump sites where waste material was hauled from all these properties and contributed to this present day pollution problem. A lot of this past pollution was caused by unknowing employees during our war years working for the safety of our Country, for this Government and on the Instructions of this government. These contracted small and large Companies employees, while working on Government Contracts during this war time period

unkowingly contributed to most of this pollution in experiments. This now leaves this pollution the problem of the present owners of the land and our Government who ordered and sanctioned this work to save our country. ALL [sic] who have lived in this valley as long as I have (over 51 years) have witnessed all of the above. A ***reasonable Insurance*** *[sic] plan should be available to* ***ALL*** *[sic] who work with, manufacture or haul* ***TOXIC*** *[sic] material the same as car insurance is required before they handle this type of material.*

As the world becomes smaller and more interdependent, and our country becomes even more pluralistic, we have got to find ways to lead by exercising tolerance toward everyone. The Civil Rights Act was passed in 1964 to insure [sic] these rights. Respect these rights in your decision.

EPA's Response: EPA does not have the legal authority to finance CERCLA (Superfund) response actions by levying assessments on all property owners. EPA and the Regional Board have undertaken an extensive investigation of the businesses and other facilities in the San Gabriel basin (including dump sites) that might have been sources of VOC contamination in the ground water. Of those facilities that EPA has identified as sources of contamination, EPA has not singled out any subgroup for cleanup responsibilities. EPA has no evidence that cesspools and septic tanks are sources of the VOCs that are the subject of the CERCLA response actions in the PVOU. Businesses that contracted to provide materials and services to the federal government during war time are not exempt from liability for cleanup costs because their contamination was not caused by an act of war (See 42 U.S.C. § 9607(b)).

Response to the Puente Valley Steering Committee (PVSC) Comments, dated March 13, 1998

PVSC Initial Comment: *PVSC incorporates herein its prior submissions to EPA with respect to the PVOU, including but not limited to:*

1. *Summary Report, San Jose Creek, Surface Water/Ground water Interaction (Camp Dresser & McKee Inc., February 1, 1994).*
2. *Puente Valley Operable Unit, Interim RI/FS, Draft Remedial Investigation Report and Appendices (Camp Dresser & McKee Inc., December 12, 1995).*
3. *Puente Valley Operable Unit, Interim RI/FS, Draft Feasibility Study Report and Appendices (Camp Dresser & McKee Inc., March 1996).*
4. *Puente Valley Operable Unit, Interim RI/FS, Comment/Response Summary, /Final Feasibility Study (Camp Dresser & McKee Inc., July 1996).*
5. *Letter of April 29, 1997 from Robert M. Walter of TRY to Brett P. Moffatt of EPA re: Puente Valley Operable Unit, San Gabriel Valley Superfund Site, Analysis of Applicable and Relevant and Appropriate Requirements ("ARARs").*
6. *Puente Valley Operable Unit, Interim RI/FS, Final Remedial Investigation Report and Appendices (Camp Dresser & McKee Inc., May 30, 1997).*
7. *PVSC Comments on EPA's 5/30/97 PVOU FS, submitted as Attachment A to letter of August 15, 1997 from Robert M. Walter of TRY to Brett Moffatt of EPA.*
8. *Comments of the Puente Valley Steering Committee to United States Environmental*

Protection Agency Superfund National Remedy Review Board regarding Puente Valley Operable Unit, San Gabriel Valley, California, Feasibility Study (October 30, 1997) (submitted with letter dated October 28, 1997).

To the extent that any of these documents, or any part of them, are not already included in the administrative record relating to the PVOU, PVSC hereby requests that such document(s) be included in the record.

EPA Response: EPA has included these documents in the administrative record. Documents 1-4 and 6 do not contain "comments" on EPA's proposed plan or the final RI/FS. EPA has responded to the comments contained in document 8 in its "Responses to Issues Raised by the Puente Valley Steering Committee for the San Gabriel Valley Superfund Sites, Puente Valley Operable Unit, City of Industry, CA," November 24, 1997, which is included in the administrative record. The comments contained in document 5 are restated in document 7. EPA addresses the comments contained in documents 5 and 7 in this Responsiveness Summary.

PVSC Comment 1: *Under "Site Description" on page 2, the Proposed Plan states that (a) the PVOU is within the San Gabriel Valley, (b) ground water in the San Gabriel Valley is contaminated with VOCs, and © the ground water from San Gabriel Valley flows into the Central Basin, and "could affect the water supply of the Los Angeles metropolitan area." The Proposed Plan and ROD should include the clarification that ground water contamination in the PVOU has never impacted the Central Basin, and is not likely to in the future even if no CERCLA regional action is implemented.*

EPA's Response: In the absence of significant ground-water pumping by production wells within the San Gabriel Basin, in the vicinity of the mouth of the Puente Valley, ground water flowing out of the Puente Valley would eventually travel west and southwest towards Whittier Narrows. This natural flow direction is documented in historical maps of the potentiometric surface prior to significant pumping in the area.

For the effect of ground-water pumping near the mouth of the valley to be considered appropriate as a means of containing contamination, these wells would need to be considered part of the CERCLA remedy. This option is left open in the Record of Decision, as well as in the Proposed Plan. Unless pumping at these wells is considered part of the CERCLA remedy, it cannot be assumed that this pumping will continue indefinitely, thus preventing migration of Puente Valley contamination through Whittier Narrows, and into the Central Basin.

PVSC Comment 2: *In the sixth paragraph of "Site Description," it is stated that "All aquifers...in the PVOU are considered to be municipal water sources...." The Proposed Plan should mention, however, that the entirety of the shallow zone is non-potable due to concentrations of total dissolved solids (TDS) and nitrates, compounds unrelated to industrial activities, which exceed drinking water standards. Also, the Proposed Plan should mention that existing governmental controls prevent exposure to any contaminated ground water.*

EPA's Response: The data collected to date indicates that portions of the shallow zone are non-potable without treatment. EPA does not know that the entirety of the shallow zone is non-potable.

PVSC Comment 3: *At the end of "Site Description" it is stated that "Figures 2 and 3 show 1996 VOC concentrations in the shallow and intermediate zones." In meetings with the PVSC, EPA has agreed that such depictions represent substantial simplifications of the actual magnitude and extent of VOC distribution. The figure referenced in this Proposed Plan, therefore, is misleading and inaccurate. EPA's revised plume maps which were presented in the January 28 public meeting and based in part on data collected by the PVSC in October and November 1997 are also misleading, as they were generated using some data that are 5 years old or older. Furthermore, the deep zone VOC maps rely heavily on inactive production wells where the VOCs are likely derived from shallow, and not "deep", contamination.*

EPA' Response: Figures 2 and 3 in the ROD provide supplemental text explaining that they are simplified representations of the magnitude and extent of the VOC contamination in the PVOU.

PVSC Comment 4: *In its "Assessment of Health Risk" on page 4, EPA concludes that the calculated risk of 5×10^{-3} for the shallow zone represents "the highest exposure that is reasonably expected to occur at the site". This calculated risk, however, assumes installation of a domestic water supply well beneath privately owned industrial property, and the distribution of that untreated water to the public for 70 years, both of which are prohibited under existing laws and regulations. It is inappropriate to (a) state that such prohibited acts are "reasonably expected to occur," and (b) base calculated risks on portions of Puente Valley (i.e. beneath individual facilities) which EPA itself has explicitly stated, in writing, are not to be considered in the PVOU remedy evaluation process. Furthermore, current concentrations are significantly below the concentrations used by EPA in their risk assessment due to the on-going remediation at individual facilities.*

EPA's Response: See EPA response to City Comment IE1.

PVSC Comment 5: *Further in the "Assessment of Health Risk", EPA states that "<u>The</u> (emphasis added) principal threat identified in the PVOU is the possibility that DNAPLs are present in the ground water...", despite the fact there is no direct evidence that DNAPLs exist today. EPA itself acknowledges that, at best, data from "some areas <u>suggest</u> the <u>possible</u> presence of DNAPLs" (emphasis added). Developing a remedy based on the possibility of a threat is inappropriate.*

EPA's Response: For the VOC contamination in ground water at the PVOU, the concept of "principal threat" does not apply, therefore it is not included in this Interim ROD. The remedy was not developed to address DNAPLs.

PVSC Comment 6: *In the first full paragraph on page 7, in the introduction to the alternatives description, EPA states: "EPA considered several alternatives to reduce risk from potential exposure to the contaminated ground water." (emphasis added). This statement is made despite the fact that no quantifiable reasonable risk of exposure currently exists, nor is one expected in the future. Furthermore, the Plan states that EPA's alternatives are "designed for migration control, rather than mass removal." It should be noted that migration control does not reduce the risk for potential exposure in the PVOU, because no complete exposure pathway exists.*

EPA's Response: EPA addressed the analysis of exposure pathways in its response to City Comment IE1. The PVSC previously agreed with EPA that there are completed exposure pathways in the PVOU (See *Puente Valley Operable Unit Interim RI/FS Comment/Response Summary, Final Feasibility Summary*, Camp Dresser and McKee Inc. (July 1996), p. 14).

The Baseline Risk Assessment found a total estimated excess lifetime cancer risk for potential future residents of five in one thousand ($5x10^{-3}$). This level of risk warrants action at the PVOU. EPA's selected remedy is an interim action intended to control the spread of contamination. Although this action will not eliminate the risks posed by ground water upgradient from the mouth of Puente Valley, it will prevent contamination from migrating to waters that are currently clean or less contaminated and will therefore limit the extent of ground water contamination posing unacceptable health risks.

PVSC Comment 7: *EPA's cost estimate for Alternative 3 ($27.8 million) does not include the replenishment costs for extraction of groundwater in the San Gabriel Basin without beneficial use in the Basin. Although the treated groundwater would be discharged within the San Gabriel Basin, if the discharge results in flow via surface water outside of the Basin, replenishment costs may be necessary. Such replenishment costs are currently $245/ac-ft/year, and thus could total several million dollars over the life of the remedy.*

EPA's Response: See EPA Response to City Comment IF.

PVSC Comment 8: *In the description of Alternative 3, EPA proposes performance criteria for the shallow and intermediate zones. The proposed criteria are identical to those proposed by EPA early in 1997, and do not reflect any of the modifications suggested by the PVSC representatives in its meeting with EPA on October 3, 1997. The PVSC's suggested changes include:*

- *Using terminology such as "restrict" instead of "prevent"*
- *Modifying "migrating" with an adverb such as "significantly"*
- *Removing "possibly" from before "a multiple of MCLs", or otherwise affirming the use of multiple of MCLs.*
- *Recognizing that the buffer zone may be defined differently for different areas of the mouth of the PVOU, and should be based on a number of factors including the aquifer characteristics, use of aquifer, access restrictions, etc.*

EPA's Response: EPA has permitted the PVSC to provide substantial input throughout the process of developing the performance criteria specified in the ROD. The final performance criteria reflect the last two changes suggested in this comment. EPA did not adopt the first two suggested changes because they would create ambiguity in the criteria.

PVSC Comment 9: *The description of Alternative 3 continues to imply that the shallow zone remedy will be a regionally-based action. The data collected by the PVSC in the fall of 1997, which EPA agreed to incorporate into the Proposed Plan, continue to strongly support the existence of several shallow plumes rather than a single broad plume as depicted in Figure 2, which are most appropriately addressed by a combination of facility-specific and sub-regional actions combined with natural attenuation. This distinction is critical to selecting and designing a cost-effective remedy. The EPA has supported monitored natural attenuation as a viable alternative in OSWER Directive 9200.4-17- Use of Monitored Natural Attenuation at Superfund, RCRA Corrective Action, and Underground Storage Tank Sites (November 1997), in which it is stated that:*

> *"...its use may be appropriate as a component of the total remedy, that is, either in conjunction with active remediation or as a follow-up measure."*

Moreover, the EPA went on to state that:

> *"For example, evaluation of a given site may determine that, once the source area and higher concentration portions of the plume are effectively contained or remediated, lower concentration portions of the plume could achieve cleanup standards within a few decades through monitored natural attenuation, if this time frame is comparable to those of the more aggressive methods evaluated for this site. Also, monitored natural attenuation would more likely be appropriate if the plume is not expanding, nor threatening downgradient wells or surface water bodies, and where ample potable water supplies are available. The remedy for this site could include source control, pump-and-treat system to mitigate only the highly-contaminated plume areas, and monitored natural attenuation in the lower concentration portion of the plume. In combination, these methods would maximize ground water restored to beneficial use in a time frame consistent with future use of the aquifer, while utilizing natural attenuation processes to reduce the reliance on active remediation methods (and reduce cost)."*

The PVSC believes the aforementioned statements support the appropriateness of facility-specific actions coupled with monitored natural attenuation.

EPA's Response: OSWER Directive 9200.4-17, Use of Monitored Natural Attenuation, is quoted as a basis for recommending "facility-specific actions coupled with monitored natural attenuation." The performance-based approach adopted for this operable unit, in addition to EPA's support of RWQCB-led actions to address contamination at individual facilities and sources, are consistent with this recommendation. However, it should be noted that the quoted Directive specifically states that such an approach is appropriate in conditions where "the plume is not expanding, nor threatening downgradient wells… [and where] …ample potable water supplies are available." The directive also states that under such conditions, the remedy "could include source control, pump-and-treat system[s] to mitigate only the highly-contaminated plume

areas, and monitored natural attenuation…" The pump-and treat system described in the Proposed Plan is designed to only address areas of relatively high concentrations in the Shallow Zone (greater than 10 times the MCL), and no mention is made of active remedial actions in areas of lower concentrations. Nonetheless, it is reiterated that the performance-based approach allows for flexibility in the selection of specific remedial activities.

PVSC Comment 10: *On pages 3 and 4 of EPA's document entitled "Response to Issues Raised By The Puente Valley Steering Committee For San Gabriel Superfund Site, Puente Valley Operable Unit, City of Industry, CA" (November 24, 1997), EPA expresses concerns regarding the PVSC's use of contaminant transport modelling. Specifically, EPA states that "Although it is typically necessary to make simplifying assumptions of this type in building numerical models, it must be clearly understood that at some scales the model cannot accurately predict the behavior of the natural system." The PVSC acknowledges the uncertainties inherent to any modelling. However, contaminant transport models are widely accepted tools to be used in concert with all field data to assist in predicting the future distribution of VOCs. At no time has the PVSC used the model at a scale where the model would be inaccurate. All models must be refined by both performing sensitivity analysis and collecting/analysing new data where gaps exist. As EPA has acknowledged, the PVSC has performed both of these refinements, and will continue to do so as new data become available.*

Furthermore, EPA notes that "measurement of migration across an individual facility at the mouth of Puente Valley supports transport velocities of an order of magnitude greater than those predicted by the model." It should be noted that (a) throughout the entire PVOU, there is only one small geographic area where the model may have underestimated flow rate, (b) the underestimate is considerably less than "an order of magnitude", © the underestimate occurs in the flow model and thus would affect particle tracking simulations as well as estimates of the contaminant transport, and (d) such underestimates have been resolved by the collection of additional data, which the PVSC has completed.

In summary, the PVSC believes that transport modelling is an essential tool to be used to assist in the interpretation of existing data and provide reasonable prediction of future VOC distribution.

EPA's Response: Comments regarding uncertainties associated with transport modeling, and the PVSC's efforts to use these tools appropriately are noted.

PVSC Comment 11: *On page 5 of EPA's November 24 document, EPA noted that the PVSC's detailed documentation of the occurrence of natural attenuation relied on "the results of facility-specific activities". This is a true statement. However, EPA also states that the use of these data "was inconsistent with the limitation of the scope of the RI/FS". Yet, EPA's Risk Assessment for the PVOU is wholly based on these facility-specific data. As noted in comment No. 4 above, EPA then extrapolated these data into an unrealistic exposure scenario that violates applicable regulations, upon which the proposed remedy selection is partially based. We do not understand*

how the facility-specific data can be rejected as inconsistent with the scope of the RI/FS on one hand, and be a significant factor in remedy selection on the other.
EPA's Response: The comment notes that EPA suggested that facility-specific data are inappropriate for assessments of natural attenuation, yet were used by EPA in the Preliminary Baseline Risk Assessment. It is inappropriate to only consider conditions at individual sites, when assessing the potential role of natural attenuation in addressing the regional spread of contamination. Site-specific data were considered in the risk assessment, as a means of assessing the potential effects of contaminants in water ingested by the general public in areas of high concentrations. This approach is consistent with EPA risk assessment guidance.

PVSC Comment 12: *On page 6 of EPA's November 24 document, EPA states that Suburban Water Systems (SWS) discontinued use of their Mid-Valley Wells because of the presence of VOCs. It is a matter of the public record that the inactive status of these wells was not due to VOCs, but rather the result of nitrate and TDS concentrations which no longer were at "manageable levels."*

Furthermore, on this page EPA cites the recent proposal of Rowland Water District to install a water supply well in the PVOU as proof that "ground water in the Puente Basin may therefore soon become a source of drinking water in the PVOU". EPA neglects to mention that (a) the proposed well would be completed in deeper zones where contamination is minimal, and not the shallow zone, where both the PVSC and EPA are concerned about TDS, nitrate, and VOC concentrations, (b) if the well were installed, it would be equipped with treatment capability, hence there would be no exposure pathway, and © EPA itself has already rejected Rowland's proposal for well installation.

EPA's Response: The comment states that the Suburban (SWS) wells within the Puente Valley were shut down because of nitrate and TDS concentrations rather than because of the presence of VOCs. EPA has received conflicting information regarding the reason these wells were shut down. One source involved with the shut-down of these wells suggested that the nitrate and TDS values were indeed manageable if the wells were operated in an intermittent fashion to accommodate peak demands, because of the ability of the purveyor to blend the water in the system. However, when high VOC levels were detected, it was no longer feasible to look at blending as an option to meet drinking water standards.

The comment also refers to EPA's suggestion that the recent proposal of Rowland Water District to install a water supply well in the PVOU suggests the potential for Puente Valley ground water to be considered as a future source of water supply. It should be noted that although the proposed well would indeed be completed in deeper, relatively uncontaminated zones, and that it would include a treatment system, the fact that this proposal underscores the value of this water supply remains. The statement that EPA has rejected Rowland's proposal for well installation is incorrect.

PVSC Comment 13: *On the matrix evaluation of Alternatives (page 5), EPA states that*

Alternative 2 "does not meet the criterion" for four of the evaluation criteria. As commented previously to EPA, the alleged failure to meet the criteria is predicated on the fact that EPA assumed in evaluating Alternative 2 the illegal delivery of contaminated drinking water to the general public. The PVSC asserts that a legitimate monitoring alternative should not be based on illegal actions.

EPA's Response: Alternative 2 consists of ground-water monitoring. This alternative does not meet four of the CERCLA evaluation criteria (overall protectiveness; compliance with ARARs; long-term effectiveness and permanence; reduction of toxicity, mobility or volume through treatment) because it fails to prevent the continued spread of ground-water contamination.

In its evaluation of alternatives, EPA did not assume the illegal delivery of contaminated drinking water to the general public. Instead, EPA considered the ability of each alternative to control the migration and use of contaminated ground water. Since Alternative 2 does not provide for ground-water extraction or well head treatment, this particular action would not limit the extraction, distribution and use of contaminated ground water. Nevertheless, EPA's assumptions regarding the existence or absence of regulatory requirements on the use of contaminated ground water do not affect EPA's determination that Alternative 2 would not adequately control contaminant migration.

PVSC Comment 14: *In the description of Alternative 2, EPA states that it "does not have any ground water containment, extraction, treatment, conveyance, or discharge components." This statement is inaccurate. EPA's Alternative 2 includes the continued extraction and conveyance (without the current treatment) of ground water from the intermediate zone by the B7 wellfield, which EPA later acknowledges would indeed "provide containment of the intermediate zone at the mouth of the valley." Therefore, Alternative 2 does, in fact, include active ground water containment and extraction.*

EPA's Response: Although the technical evaluations of Alternative 2 in EPA's Feasibility Study consider the effects of regional ground water extraction in the "B7 well field," the costs of this extraction and required treatment are not considered. As explained in the Feasibility Study, regional ground water pumping is considered in hydraulic evaluations of ground water flow because it is an essential and dominant factor affecting the direction and velocity of ground water movement. However, because Alternative 2 does not consider this extraction to be part of the specific remedy, the costs for actually undertaking this extraction are not considered.

EPA Response to PVSC Comments on EPA's 5/30/97 PVOU FS "(Attachment A)" Incorporated by Reference into Comments on the Proposed Plan

PVSC Attachment A Comment 1: *Section 1.1 - EPA's text states "...the development of alternatives for remedial action to address shallow groundwater contamination that should be addressed through parcel- or source-specific actions are not goals of this RI/FS." This is*

inconsistent with the remedial alternatives developed by EPA in Section 4 that include shallow groundwater remedies.
EPA's Response: The RI/FS did not address parcel-specific contamination. These source control actions are under the purview of the RWQCB. The remedial alternatives developed by EPA in Section 4 address regional shallow ground water contamination, which is consistent with the goals of the RI/FS.

PVSC Attachment A Comment 2: *Section 1.1.3 - Same comment as above*.

EPA's Response: Same as response above.

PVSC Attachment A, Comment 3: *Section 1.2, end of second paragraph - EPA adds the sentence "In addition, while some of the releases may have taken place years, if not decades in the past, the potential exists that such releases continue at this time." The PVSC's July 1996 FS had stated, with EPA's concurrence, that "The PVSC is aware of no evidence nor have any data been collected during this RI/FS to suggest that releases are continuing." EPA's statement is misleading and inconsistent with data gathered during the RI, which found no evidence that releases are still occurring. No risk from potential ongoing releases was quantified in the EPA risk assessment, which also lacked evidence of ongoing releases. This statement should be deleted.*

EPA's Response: Many of the industrial and commercial activities that caused the release of VOC contamination are continuing in the PVOU. EPA has evidence that releases from some facilities may have occurred as recently as the 1990s. The potential for future releases of VOCs to the ground water still exists.

PVSC Attachment A, Comment 4: *Section 1.2.4 - Most of the last two paragraphs of the PVSC's Section 1.2.4 have been deleted. These paragraphs described the poor water quality and corresponding lack of domestic use of groundwater in Puente Basin, and also described Watermaster Rule 28 and the effectiveness of existing wells and institutional controls in providing plume migration control. At least some of the deleted text appears to have been relied upon in Section 4. The deleted information describes existing conditions in the PVOU and is relevant to analysis of remedial alternatives.*

This section omits all text stating that groundwater in the Puente Basin has high concentrations of TDS and nitrates, which, coupled with poor aquifer yields, largely deters present and future use of the groundwater for potable supply. The discussion in this section should include the fact that the limited amount of groundwater extracted in the Puente Basin is used for irrigation only, and is not suitable for human consumption because of high nitrates and TDS.

The resulting text also completely omits information about both existing and potential additional Watermaster actions and institutional controls that have been used, and/or could reasonably be expected to be used, to control migration. This section should include a description of the

Watermaster system of water use controls, which effectively precludes private domestic wells both in the PVOU and in the Main San Gabriel Valley, and limits the production of groundwater for potable uses to regulated public water supply systems. It should also include a discussion of the containment of groundwater that is occurring as a result of the operation of the "B7" wellfield by water purveyors, and the water management objectives of Watermaster Rule 28. This information is relevant to the identification of pathways of risk, remediation goals, and remedial action objectives. The lack of this information makes the subsequent identification of domestic consumption as the pathway of risk (Section 3.1.2.3) misleading, in so far as it implies that there are or may be pathways other than through a limited number of public water supply systems.

EPA's Response: The State of California has identified the ground water in the PVOU as a source of drinking water. In addition, not all PVOU ground water has high levels of nitrate and total dissolved solids (TDS) or poor aquifer yields that deter its use as drinking water. Puente Basin ground water has been used as drinking water in the past.

EPA included a discussion of the Main San Gabriel Valley Watermaster regulations and other exposure-control mechanisms in section 1.5.2 of the FS. These institutional controls are not relevant for identifying risk pathways, remediation goals or remedial action objectives. See EPA responses to City Comment IE1 and Goe Comment I. EPA does not assume the effectiveness of institutional controls when assessing site risks or evaluating remedial alternatives against the "no-action" alternative.

EPA discussed B7 well field pumping in the FS and included the effects of this pumping in the development and analysis of the remedial alternatives.

PVSC Attachment A, Comment 5: *Section 1.3 - EPA's text refers to a target completion date of May 1997 for the final RI report. The text should be changed to refer to the actual submittal date of May 30, 1997.*

EPA's Response: Comment noted.

PVSC Attachment A, Comment 6: *Section 1.3.1 - Starting at the top of page 1-14 with "However, similar materials...", the concept of laterally extensive shallow, intermediate, and deep groundwater zones is introduced. The text suggests more extensive laterally-transmissive layers and less vertical confinement than was described in the FS prepared by PVSC. However, the FS does conclude that there is not a great difference in hydraulic conductivity between the alluvium and the non-water bearing bedrock. A discussion has been added regarding the relative hydraulic conductivity of the shallow, intermediate, and deep aquifers. A range of hydraulic conductivity for the three aquifers should be provided. Also, these low hydraulic conductivity values should be compared and contrasted with the typical range of higher hydraulic conductivity in the more permeable aquifers in the Main San Gabriel Basin.*

EPA has deleted much of the discussion on the predominance of fine-grained sediments throughout the Puente Valley. This discussion should be re-inserted. This is a significant feature that affects the quantity and velocity of both groundwater flow and contaminant transport.

EPA revised the text to speculate that "the deep zone may be correlated" between MW6-62 and MW6-71. Since this interpretation is inconsistent with the hydraulic heads, is not apparent in geophysical logs, and is not used in subsequent analyses, this is speculation which should be deleted.

There is an apparent typo at the beginning of the paragraph which starts "At an upgradient of mid-valley..." that makes this sentence confusing.

EPA's Response: The revised FS text attempts to underscore the heterogeneity of the alluvial sediments, and to explain that the three "aquifers" have been identified as a means of simplifying the natural system for analytical and numerical purposes. Discussions of their properties would suggest a better defined layering than is the case. The discussion of relative hydraulic conductivity clearly demonstrates the finer grained nature of the Puente Valley sediments compared to those of the Main San Gabriel Basin. Typo noted.

PVSC Attachment A, Comment 7: *Section 1.3.4 - The PVSC's third bullet (regarding subdrain flow with supporting calculations) has been eliminated and compressed into a weaker single sentence at the end of EPA's second bullet. EPA has deleted calculations that support the statement that the flow through the subdrain is relatively less than the discharge to the weepholes. The subdrain flow calculations and analysis should be retained to support the conclusions.*

The PVSC's last bullet (regarding VOC migration in the subdrain) has been revised. The change in wording assumes the need for a remedy. This speculation, which is not supported by field data, should either be deleted or qualified.

EPA's Response: Revisions to this section were made for the purpose of simplifying the discussion, and to focus on the issues pertinent to the FS.

PVSC Attachment A, Comment 8: *Section 1.4.1.1 - EPA has deleted in its entirety PVSC's discussion of ground water concentrations that have decreased by orders of magnitude where facility-specific remedial action under the purview of the RWQCB has been and is occurring. This discussion should be re-inserted.*

EPA's Response: For the purposes of simplification and to focus technical discussions on matters pertinent to the objectives of the FS, sections of earlier versions of the FS were removed or modified. Comment noted.

PVSC Attachment A, Comment 9: *Section 1.4.1.1 - EPA's "shallow groundwater" discussion is based on data from facility wells that are part of the EPA database but were not a specific component of PVSC's RI scope of work. This changes the concept of the "shallow groundwater being addressed by RWQCB" to say that regional groundwater "includes all groundwater contamination that has migrated offsite of facilities". This shift in focus pervades EPA's FS and means that the current FS is attempting to develop remedies and recommendations where no data has been developed to support them. It is arbitrary and capricious to expand the FS beyond the scope of the RI data.*

EPA's Response: EPA did not change the concept of shallow ground water.

PVSC Attachment A, Comment 10: *Section 1.4.1.1 - EPA's reference to Table 1-2 on page 1-19 is incorrect. The reference apparently should be to Table 1-11, which is a new table. This table is incorrect, because of the inclusion of shallow facility wells in the east valley as being in the intermediate and deep zones, rather than the shallow zone.*

EPA's Response: Comment noted.

PVSC Attachment A, Comment 11: *Section 1.4.1.1 states "As the result of downward hydraulic gradients and available pathways, VOCs have also spread to the intermediate zone and portions of the deep zone in Puente Valley." No evidence exists for available pathways. EPA uses downward gradients as the sole basis for asserting vertical migration occurs, and ignores all other data. Additionally, the ground water model, which EPA agrees is a reasonable representation of the hydrostratigraphic environment, shows that little or no vertical leakage occurs.*

EPA's Response: The ground water model is a gross simplification of the natural system. The layering in the Puente Valley is not well defined. It is more reasonable to assume that low-conductivity layers are not continuous than to assume there are no pathways. Other mechanisms for contaminant migration into the intermediate and deep zones include the introduction of DNAPLs that may have sunk into these horizons because of their specific gravity.

PVSC Attachment A, Comment 12: *Section 1.4.1.1 states "...it appears that most of the contamination detected in the production wells is emanating from the intermediate zone." Also stated several paragraphs later is "...VOC concentrations from production wells are likely a combination of higher concentrations from the intermediate zone and nondetect concentrations from the deep zone." There is no mention of the potential for annular leakage from a shallow zone source. Additionally, given the high flux from the Main San Gabriel Basin, compared with the relatively low contribution from Puente Basin, the known concentrations in the intermediate zone do not seem sufficiently elevated to produce the concentrations seen in the production wells.*

EPA's Response: Hypothetical sources of contamination in production wells discussed in the FS are consistent with observed conditions.

PVSC Attachment A, Comment 13: *Section 1.4.1.1 - For the intermediate zone, EPA describes the extent of VOC contamination in the "Mouth of Valley", "Mid-/Central Valley", and "East Valley" areas. EPA did not produce a plume map for the intermediate or deep zones, but rather created separate figures for PCE and TCE values in "wells screened across multiple zones" (Figures 1-16 and 1-17) where the concentrations are posted. EPA's modelling (Appendix B) does have a Figure B-9 which shows a "deep" VOC contamination plume, but PVSC believes this is in what EPA describes as the intermediate zone in the FS text. This should be clarified.*

EPA's Response: Comment noted.

PVSC Attachment A, Comment 14: *Section 1.4.1.1 - In discussing the intermediate zone contamination at the mouth of the valley, EPA includes a new section "PCE and TCE Concentrations Versus Time at Mouth of Valley Production Wells" that references Figures 1-18 through 1-25. Figures 1-18 and 1-19 are incorrectly referred to on page 1-26 as "Figures I1 and I2". The table in the middle of page 1-22 shows the average 1995 PCE concentrations in three production wells, including B11B and B7C. PCE is shown as "ND", which does not appear to be in agreement with Figures 1-18 and 1-20 and text on page 1-26 that describes PCE concentrations in these wells as having "generally increased from the early 1980s to the mid 1990s." EPA's interpretation of the data shown on these figures implies that there are continuing increases in PCE concentration, but since the late 1980s this does not appear to be the case for well B7C. PCE data for well B11B appears to be relatively stable since about 1993. EPA's interpreted increasing trend in TCE and PCE concentrations may be an artifact of improved analytical methods and/or sample collection techniques since the early 1980s, when quantitation limits for these compounds were typically 5 µg/l. EPA uses inconsistent vertical scales on Figures 1-18 through 1-25 which make the results misleading. If plots of TCE versus time in wells B7C and B11B (Figures 1-19 and 1-21, respectively) were plotted on the same vertical scale used for PCE (Figures 1-18 and 1-20), then it would be apparent that TCE concentrations in these wells have not been increasing. Furthermore, during the past decade, VOC concentrations in most of the production wells at the mouth of the valley have exhibited a steady or decreasing trend.*

EPA's Response: Comment noted. The data presented in the FS may be interpreted in a variety of ways by the reader. The interpretations offered are considered generally consistent with the data shown.

PVSC Attachment A, Comment 15: *Section 1.4.1.1 - The last paragraph on page 1-22 refers to a non-existent Table 1-3 which may be Table 4-1.*

EPA's Response: The comment correctly notes that the reference in the FS to Table 1-3 is incorrect. The information is contained in Table 4-1 and Figures 1-18 through 1-25 of the FS.

PVSC Attachment A, Comment 16: *Section 1.4.1.1 - At the bottom of page 1-23, EPA*

inappropriately suggests that the similarity in water quality results in SWS wells is attributable to the purging methodology; the text is inconsistent with the language that the PVSC and EPA agreed to for the Final RI Report and incorrectly refers to the SWS wells as being gravel-packed.

EPA's Response: Comment noted.

PVSC Attachment A, Comment 17: *Section 1.4.1.1 - There is considerable confusion regarding the designation of a "deep" zone in the east valley, the depth of this zone, and, if it exists, whether it is correlatable with "deep" zones in mid-valley and mouth of the valley. Section 1.4.1.1 appears to show the same high concentrations of VOCs in the intermediate and deep zones in the east valley. EPA appears to be relying on the same well data for both zones, which is not valid.*

EPA's Response: See response to next comment.

PVSC Attachment A, Comment 18: *For the "deep" zone discussion beginning on page 1-24, the first sentence refers to two non-existent FS sections. The cited sections are actually in Appendix E of the PVSC's Final RI Report. Concentrations are only discussed for mid-/central valley and east valley since no VOCs have been detected in the deep zone in the mouth of the valley. The wells used by EPA to represent the deep zone in mid-/central valley are MW6-62 and MW6-71. As stated earlier, the RI data do not support a correlation of the deep zone between these two wells. For the east valley, EPA states that the deep zone is monitored by MW6-81 and "10 facility wells located near San Jose Creek on the north side of the east valley bedrock high." The PVSC does not believe that these wells should be considered deep. EPA's interpretation of a deep zone in the east valley is likely incorrect. It is more likely, based on the RI findings, that the deep zone pinches out near the mid-valley area. At the very least, EPA should reiterate the relatively shallow depth of the "deep aquifer" in that area.*

EPA's Response: EPA agrees that the extent of the deep zone may need to be expanded further, however for the purposes of this Interim Action, these differences of interpretation of the East Valley are not significant.

PVSC Attachment A, Comment 19: *Page 1-20, First Bullet - According to the data listed in Table 1-7, the VOC concentrations at this location are not greater than 100 times MCL as stated, but between 20 and <100 times MCLs.*

EPA's Response: EPA disagrees with this comment, see Figure 1-10 in the FS.

PVSC Attachment A, Comment 20: *The following sections of the FS contain what the PVSC believes to be incorrect references to east valley facility wells as being "deep" or "intermediate", rather than "shallow":*

- *Page 1-21, Paragraph 4 - Facility wells in the east valley area should not be considered*

as part of the intermediate zone, based on their screened intervals

- *Page 1-21, Paragraph 7 - The statement that intermediate zone VOC concentrations generally are higher in the east and mid-valley area is incorrect, because the facility wells in the east are shallow, not intermediate*

- *Page 1-22, First Table - The east valley monitoring wells, which are listed as having PCE concentrations of ND to over 444 µg/l, are shallow, not intermediate wells*

- *Page 1-24, Paragraph 1 - The 12 facility monitoring wells listed as intermediate wells in the east valley are shallow monitoring wells*

- *Page 1-24, Paragraph 4 - The statement that VOCs have been detected upgradient from mid-valley is incorrect, because no VOCs were detected in MW6-81 and the 10 facility wells are shallow wells*

- *Page 1-24, Paragraph 5 - The facility monitoring wells in the east valley should not be included as part of the deep zone*

- *Page 1-24, Paragraph 6 - Including facility monitoring wells in the east valley as deep wells is inaccurate*

- *Page 1-25, Paragraph 3 - The statement that elevated levels of VOCs were detected in the deep zone, based on the concentrations in the facility wells, is incorrect, because these wells are screened in the shallow zone*

- *Page 1-25, Paragraph 4 - The reported highest PCE concentration of 335 µg/l is from Ajax well B-19, which is screened from 20 to 40 feet bgs, and the reported highest TCE concentration of 1,036 µg/l is from Ajax well P-02, which is screened from 40 to 45 feet bgs. Both of these wells should be considered shallow wells.*

- *Figures 1-26 through 1-36 - These figures are inaccurate, because the facility wells are actually screened in the shallow zone, and not the intermediate and deep zones*

EPA should re-designate all of these referenced wells as shallow, rather than intermediate or deep.

EPA's Response: Because the layering of the Puente Valley, particularly in its eastern extent, is so ill-defined, discussions of which horizon individual monitoring wells are completed in are of little consequence to the overall conclusions of the FS.

PVSC Attachment A, Comment 21: *Page 1-22, Paragraph 6 - There is an incorrect citation for Table 1-3, it does not contain B7 wellfield data.*

EPA's Response: Comment noted, see response to PVSC Attachment A, Comment 15.

PVSC Attachment A, Comment 22: *Section 1.4.1.3 - Although this section is largely unchanged from the PVSC FS, the text "Elevated nitrates and TDS have clearly been a widespread, long-observed problem in the Puente Basin. The source of these constituents has never been attributed to industrial facilities" has been removed, and replaced with "... seemingly unrelated to industrial activities in the PVOU...". These changes leave the issue of sources open for interpretation and omit the well-documented historic context for nitrates and TDS. The original statement should not have been removed, as the public could erroneously conclude that the industrial facilities that contributed VOCs are also responsible for elevated nitrate and TDS concentrations.*

EPA's Response: This sentence was reworded to more accurately reflect EPA's level of knowledge regarding sources of nitrate and TDS contamination in the PVOU. The new sentence does not imply that industrial activities are known to be a source of nitrate and TDS contamination.

PVSC Attachment A, Comment 23: *Section 1.4.2.1 - The second of two bullets in the middle of page 1-32 inappropriately deletes the discussion of the four "fates" of VOCs in ground water that are included in the PVSC's bullet. EPA also deleted the discussion on the likelihood that facility-specific actions, continued pumping of the B7 wellfield, and natural attenuation may meet the remedial objectives for the PVOU. This discussion should not be deleted as this scenario is supported by ground water quality data and contaminant transport analysis.*

EPA's Response: EPA deleted the referenced text because there was insufficient data for EPA to conclude that these potential fates limit the need for an additional regional remedy.

PVSC Attachment A, Comment 24: *Section 1.4.3.1 - The last sentence of the second paragraph of the PVSC's text, which described existing data and modelling as supporting natural attenuation, has been deleted. The third paragraph is the same as the PVSC's, but doesn't utilize 1995 data for B7C and B11B which are cited on page 1-22. In the fourth paragraph, EPA raises the specter of the B7 wellfield wells drawing contamination deeper and adds the three bullets at the top of page 1-34 that cite negative consequences of "continuing to permit the VOC contamination to migrate to these production wells". EPA says "continuing to permit....<u>will</u> have the following effects:", but then for each effect, EPA says it <u>may</u>. There is no evaluation of actual data, which do not support the likelihood of any of these effects. Furthermore, EPA's text does not caveat the conclusion that any pumping-induced vertical migration would (a) be localized, and (b) pumped right back out of the aquifer by the wells.*

EPA's Response: EPA believes that the continued migration of VOCs into production wells would have the effects listed in Section 1.4.3.1 of the FS because of the continued need to treat large volumes of ground water. EPA agrees that contamination pulled into deeper zones by the B7 wells could be captured as long as those wells operate at sufficient capacities.

PVSC Attachment A, Comment 25: *There is no justification for the language in the first bullet on page 1-34 that states that response costs may greatly increase if contamination is allowed to continue to migrate to the B7 wellfield. EPA's speculation appears to be based on an over-simplistic analysis. Water quality data and contaminant transport analysis support the likelihood that B7 wellhead treatment costs will not increase without supplemental pump and treat remedial action. These supporting data and analysis include the observation that VOCs have not been detected in the deep aquifer in the vicinity of the B7 wellfield; over the past decade, VOC concentrations in the B7 wellfield have mostly remained steady or exhibited a decreasing trend; and, contaminant transport modelling indicates that B7 wellhead treatment costs will not increase without supplemental pump and treat.*

EPA's Response: See EPA response to PVSC Attachment A Comments 14 and 24.

PVSC Attachment A, Comment *26:* *The third bullet says that allowing continued migration of VOCs to wells B7C and B11B may increase institutional hurdles to implementation of a response action because of the need to negotiate agreements with the owners of the wells. This seems contradictory to statements later in the FS that an agreement with the water purveyors would be an acceptable remedy for intermediate zone control at the mouth of the valley.*

EPA's Response: These two statements should not be read as contradictory. The continued migration of contaminants into the B7C and B11B production wells increases institutional hurdles because the parties implementing the response action would need to reach an agreement with the well owners to use their facilities as part of the response action. EPA is not opposed to the negotiation of an agreement to use these facilities.

PVSC Attachment A, Comment *27:* *Section 1.4.3.3 - PVSC's estimate of 0.25 gpm for the discharge across the subdrain has been deleted from the second paragraph. The third paragraph has been modified, with a new last sentence which says "Contaminated groundwater in the subdrain system would likely re-enter the aquifer upgradient of the B7 wellfield." EPA's statement regarding contaminated groundwater in the subdrain re-entering the aquifer upgradient of the B7 wellfield should be qualified (i.e., contaminated groundwater re-entering the aquifer would be captured by any of the regional remedial alternatives in this FS) or deleted. The insignificance of the subdrain in contaminant transport should not be arbitrarily deleted from this discussion.*

EPA's Response: Comment noted. See response to CPC Comment 2.

PVSC Attachment A, Comment *28:* *Section 1.4.3.5 - Under <u>Adsorption and Desorption</u>, text was removed that documented low rates of desorption compared with sorption. The second part of the PVSC's paragraph that starts "Contaminants are distributed..." has been deleted. This original paragraph included a discussion of the slow rate of desorption of VOCs from soil and the importance of adsorption to soil in removing VOC mass from the ground water system.*

Despite the text which still says "...as illustrated in examples detailed below...", the last two paragraphs on page 1-35 of the PVSC's FS that cite PVOU-specific examples and quantification of retardation have been removed. This inappropriately weakens the natural attenuation discussion by ignoring the fact that some adsorbed VOC mass is effectively removed from the system. The deleted text supports the contaminant transport modelling conducted for the PVOU and should be re-inserted.

EPA's Response: Through the editing process, several sections of earlier versions of the FS were removed or modified for simplicity, readability, and to focus technical discussions on matters pertinent to the objectives of the FS.

PVSC Attachment A, Comment *29:* *Under Decay, the PVSC's conclusion at the end of the first paragraph that "some decay processes are operating in the PVOU" has been deleted. The paragraphs near the bottom of page 1-36 of PVSC's FS that cite examples of anaerobic degradation have also been removed. At the end of the first full paragraph on page 1-38, EPA adds the sentence "As mentioned previously, the relatively limited occurrence of daughter products in the PVOU may be the result of discharges of the constituents at the surface, either directly, or as impurities in other chlorinated VOCs." The examples that EPA removed directly refuted this conclusion. Not only is data nonexistent to make this statement, it was refuted by the removed PVSC-presented examples. It is recognized that in most unconfined and highly permeable aquifers, anaerobic degradation of VOCs is insignificant. However, in the Puente Valley, the aquifers are mostly fine-grained, locally confined, and have a relatively high total organic carbon content. Also, as discussed in PVSC's FS, there are locations where daughter products are present at concentrations higher than would be expected if these compounds were impurities. The relative stability of the ground water plume over the last 11 years, as cited elsewhere in the FS, is another factor consistent with biodegradation of contaminants. Consequently, anaerobic degradation is likely to occur in Puente Valley; and, the data and analysis presented in PVSC's FS should not be deleted.*

EPA's Response: See response to PVSC Attachment A Comment 28.

PVSC Attachment A, Comment 30: The Summary at the end of this section which states that "Several natural attenuation mechanisms are documented as operating in the PVOU" has been deleted. The deletion of discussions regarding natural attenuation appears to be designed to discount the possibility that not only does natural attenuation occur, it may preclude the need for additional pump and treat. These selective deletions are misleading to the public and water community and contrary to EPA's concurrence with the PVSC that natural attenuation is occurring.

EPA's Response: See response to PVSC Attachment A Comment 28. The FS states that observations in the PVOU suggest that natural attenuation is a factor in limiting the migration of VOCs.

PVSC Attachment A, Comment 31: *Section 1.5.1 - The portion of this section beginning with the last paragraph on page 1-39 of PVSC's FS ("A brief overview...") has been deleted. This had been the list of remedial activities that had taken place at 32 facilities, based on RWQCB records. Deleting this section ignores the fact that source control actions have lowered concentrations substantially. Such reductions are the basis for not including a continuous source term in the modeling simulations. Facility-specific actions have and will continue to remove more contaminant mass from the system than either of the groundwater pumping alternatives being considered by EPA. These actions, when combined with natural attenuation and pumping from the B7 wellfield, are likely to render additional pump and treat unnecessary to provide adequate containment. Because mass removal by facility-specific actions may play a very important role in affecting the need for additional pump and treat, and because EPA agrees that a subregional "hot spot" control remedy could be effective for shallow groundwater remediation, this discussion should not be deleted. In last paragraph of the remaining text, Ajax should be added as one of the facilities using SVE and/or excavation for source control actions.*

EPA's Response: This comment appears to contradict the PVSC's earlier position that Section 1.5.1 was included in the FS as "background information only," and was not intended to support the incorporation of source control actions into remedial alternatives (*Puente Valley Operable Unit Interim RI/FS Comment/Response Summary, Final Feasibility Summary*, Camp Dresser and McKee Inc. (July 1996), p. 12). The deleted text did not include the quantitative information that is necessary for EPA to evaluate the effectiveness of source control actions in containing contaminant migration.

EPA agrees that source control actions in the PVOU remove VOC mass from the shallow zone and therefore may affect the need for additional ground-water extraction. Accordingly, the ROD allows the responsible parties to use source controls actions to help achieve the containment requirements established by the performance criteria.

PVSC Attachment A, Comment 32: *Section 1.5.2 - The second sentence has been deleted. This had referred to the effectiveness of governmental controls and use restrictions. All of Section 1.5.2.1 starting with the last line on page 1-42 of PVSC's FS has been deleted. This had described how governmental controls limit or make exposure pathways incomplete. The first paragraph of Section 1.5.2.2 (Judicially Established and Enforceable Use Restrictions) was deleted, which again had discussed the limited exposure pathways that exist because of use restrictions. Additional sentences that were deleted from this section are "Similar controls are available to the Puente Basin Watermaster, although they have been unnecessary since no extracted groundwater from the Puente Basin is used for drinking water" and "Watermaster analyzes the submitted data to develop an overall Basin Water Quality Plan which is submitted to the Regional Water Quality Control Board." Appendix J (Watermaster Rule 28) is not included in EPA's FS.*

EPA's FS omits the discussion that appears in PVSC's FS explaining the unique water use controls in the PVOU that limit the potential pathways of exposure. The omission is inconsistent

with EPA's Superfund Administrative Reforms, which urge the use of realistic land use scenarios. The FS also omits PVSC's discussion of wellhead treatment and blending practices, which, consistent with the Safe Drinking Water Act, have protected the public from exposure to contaminants in excess of MCLs.

EPA's Response: EPA deleted the draft text because the description of exposure pathways was misleading (see EPA Response to City Comment IE1), the inclusion of hypothetical institutional controls was not relevant to the discussion of existing exposure control mechanisms, and the salient points from the deleted text are covered elsewhere in the FS. Watermaster Rule 28 is discussed in Section 1.5.2.2.

The final text is consistent with current EPA guidance which advises that EPA use realistic assumptions when considering future land use scenarios. EPA expects that most of the land in and around the PVOU will continue to be used for residential, commercial and industrial uses and these uses will continue to depend on local water supplies. EPA also expects that ground water at the mouth of Puente Valley will continue to be used for domestic purposes and additional drinking water wells may be placed elsewhere within the PVOU in the future.

PVSC Attachment A, Comment 33: *Section 1.6 - This section has been completely re-written. It repeats generalized, pre-RI conclusions of the Baseline Risk Assessment (BRA), but deletes PVSC's application of the findings of the RI to the conclusions of the BRA. The BRA calculated the excess cancer risk from residential exposure to contaminated groundwater in active production wells (even though there are institutional controls to prevent consumption of this water). Since the results were within the acceptable risk range and no valid complete exposure pathway has been identified, no RME has been established at an unacceptable level for any receptor. This section also fails to note that the BRA was broader in scope than the RI/FS and that, accordingly, not all the general conclusions of the BRA are relevant to the FS. The RMEs of the BRA are not applicable to the only medium of concern addressed in the RI, regional groundwater. PVSC's discussions in Section 1.6 of its FS should be-re-inserted.*

EPA's Response: The referenced text criticized the Baseline Risk Assessment for using shallow ground water data as the basis for evaluating human health risks and for failing to assume the effectiveness of institutional controls. The draft text incorrectly assumed that the RI/FS was concerned only with regional deep ground water and that institutional controls should have been considered in evaluating exposure pathways. See responses to City Comment IE1 and Goe Comment I.

PVSC Attachment A, Comment 34: *Figures - As noted previously, the vertical scale is not the same on all figures, which could lead to misinterpretation. For instance, Figure 1-24 for well 147W3 indicates a spike in PCE concentrations in the late 1980s/early 1990s that at first glance appears significant but is below drinking water standards (max about 4.5 µg/l) and would be a barely-recognizable blip if graphed on the same scale as some of the other figures.*

Figures 1-10 through 1-15 state "Samples older than 5 years not evaluated", but the figures seem to incorporate old or inaccurate data similar to that used in figures PVSC commented on in the RI Appendix prepared by EPA.

EPA's Response: Comment noted.

PVSC Attachment A, Comment 35: *Section 2.3.1.1 - The first paragraph on page 2-4, which discusses attaining MCLs and non-zero MCLGs, has been added. This section ignores the natural unsuitability of the PVOU shallow ground water for use as drinking water, due to high nitrates and TDS, and low specific yield.*

EPA's Response: The State of California considers the ground water in the PVOU to be a source of drinking water. It is EPA policy to consider the beneficial use of ground water and to protect against current and future exposures. Ground water is a valuable resource that should be protected and restored if necessary and practicable. Ground water that is not currently used may be a drinking water supply in the future. (55 Fed.Reg. 8732).

EPA recognizes that shallow ground water at the mouth of Puente Valley is not currently used for drinking water, and has therefore established shallow zone containment criteria at ten times the relevant drinking water standards. In addition, the ROD does not establish chemical-specific cleanup standards for restoration of the shallow ground water because the remedy is an interim action to contain contamination.

PVSC Attachment A, Comment 36: *Section 3.1.2 - Although EPA correctly stated the four required elements of a remedial action objective (RAO) in Section 3.1.1, it has erred in identifying them. EPA correctly identifies the first two elements of an RAO for the PVOU -the contaminants of concern are VOCs, particularly PCE and TCE; and the medium of concern is regional groundwater. The final two elements of an RAO are exposure pathway(s) and remediation goals(s). The latter element, remediation goal(s), as stated correctly in Section 3.1.1, must "establish acceptable exposure levels that are protective of human health and the environment."*

EPA's Response: EPA does not agree that it erred in identifying the four required elements of the remedial action objectives (RAOs) for the PVOU. See responses to PVSC Attachment A Comments 37 through 39.

PVSC Attachment A, Comment 37: *Section 3.1.2.3 - EPA identifies domestic use of drinking water as the pathway of exposure. PVSC agrees that this is the relevant potential pathway of exposure. Unlike other areas of the country, though, this pathway cannot be randomly accessed through private residential wells. The pathway is limited to a water supply system maintained by regulated water purveyors.*

EPA's Response: EPA agrees that ground water in the PVOU can be legally accessed only by

certain entities holding water rights.

PVSC Attachment A, Comment 38: *Section 3.1.2.4 - EPA attempts to identify remediation goals. However, each goal is flawed by its failure either to specify an acceptable exposure level or, because material risk only arises from exposure, to connect a specific acceptable exposure level to an identified, realistic risk specific to this OU. Some goals are further flawed by including elements that do not belong in a remediation goal. The table below analyzes goals:*

No.	***Remediation Goal***	***Specified Acceptable Exposure***	***Identified Risk***	***Comment***
1.	*"Preventing exposure of the public to contaminated groundwater including but not limited to, attaining MCLs for VOCs measured at the point of compliance."*	*MCLs for VOCs*	*None*	*Generalized statement that represents SDWA policy. "[M]easured at the point of compliance" is inappropriate for a remediation goal, which measures concentrations at the point of exposure.*
2.	*"Inhibiting contaminant migration from more highly contaminated portions of the aquifer to less contaminated areas or depths of the aquifer."*	*None*	*None*	*This is a description of a remedial activity rather than a remediation goal.*
3.	*"Reducing the impact of continued contaminant migration on down-gradient water supply wells."*	*None*	*None*	*The water supply wells are not themselves a point of exposure to unacceptable risk.*
4.	*"Protecting future uses of less contaminated and uncontaminated areas and depths of the aquifer."*	*None*	*None*	*This is a policy statement rather than a remediation goal as defined by the NCP.*
5.	*"Initiating efforts designed to attain MCLs and MCLGs that are relevant and appropriate within the PVOU."*	*None.*	*None.*	*This is not an exposure-specific goal. The determination of whether any MCLs or MCLGs are relevant and appropriate for this site is part of the process of identifying ARARs under NCP §300.400(g). They may be action-specific only, e.g., if extracted groundwater is furnished for domestic consumption. For a permanent remedy, they may be chemical-specific. However, for this interim remedy, they cannot be chemical-specific ARARs applicable in the medium of concern. See §2.3.1.1.*

Remediation goals are defined in the Federal Register as follows: "Remediation goals are a subset of remedial action objectives and consist of medium-specific or operable unit-specific chemical concentrations that are protective of human health and the environment and serve as goals for remedial action." 55 Fed. Reg. 8712-13.

EPA's Response: Remediation goals establish acceptable exposure levels that are protective of human health and the environment. EPA uses health-based ARARs to set remediation goals, when they are available. 40 C.F.R. § 300.430(e)(2)(I). Since this is an interim containment remedy, the FS did not develop remediation goals for ground-water restoration (e.g. MCLs for ground water). The FS instead developed preliminary remediation goals that address potential impacts of contamination on the public and on uncontaminated and less contaminated drinking water.

This comment correctly notes that three of the remediation goals do not specify acceptable exposure levels. Remediation goals 1 and 5 specified MCLs and MCLGs as remediation standards. The determination of final remediation goals is made based on the balancing of the nine evaluation criteria during the remedy selection process. After completing the FS, EPA reconfigured the remediation goals for the proposed plan (specifying MCLs and a potential multiple of MCLs), then identified the final remediation goals for the ROD (MCLs/MCLGs and ten times MCLs/MCLGs). The PVSC provided substantial input into this process. The final remediation goals are the chemical-specific standards used in the ROD's performance criteria.

The NCP does not require that each remediation goal state a connection between a specific exposure level and an identified, realistic risk specific to the PVOU. Read in context, it should be clear that the remediation goals are based on the human health risks posed by the contaminated ground water.

PVSC Attachment A, Comment 39: *In Section 3.1.2.5, EPA identifies RAOs. Since a proper remediation goal is a necessary element of an RAO, EPA's error in Section 3.1.2.4 infects this section with error. EPA's RAOs, furthermore, fail to specify all four elements under NCP §300.430(d)(2). The following table analyzes the RAOs:*

RAO	***Specified Contaminant of Concern***	***Specified Medium of Concern***	***Specified Exposure Pathway***	***Specified Remediation Goal***	***Comment***
"Prevent exposure of the public to contaminated groundwater"	*None*	*Ground-water*	*None*	*RG#1*	*Merely reiterates RG #1, which is itself a deficient RG.*
*"Inhibit contaminant migration from the more highly contaminated portions of the aquifer to the less contaminated areas or depths"**	*None*	*None*	*None*	*RG#2*	*Merely reiterates RG#2, which is itself a deficient RG.*
"[T]o reduce the impact					*Merely reiterates RG#3,*

*of continued contaminant migration on downgradient water supply wells."**	*None*	*None*	*None*	*RG#3*	*which is itself a deficient RG.*
*"[T]o protect future uses of less contaminated and uncontaminated areas."**	*None*	*None*	*None*	*RG#4*	*Merely reiterates RG#4 which is itself a deficient RG.*

[These RAOs are grouped in one bullet point in §3.1.2.5]*

EPA itself has noted that "[r]emedial action objectives include both a contaminant level and an exposure route recognizing that protectiveness may be achieved by reducing exposure as well as reducing contaminant levels." 55 Fed. Reg. 8713.

EPA's Response: Section 3.1.2.1 of the FS identifies VOCs as the contaminants of concern. Section 3.1.2.2 identifies ground water as the medium of concern. Section 3.1.2.3 identifies domestic use of drinking water as the most significant potential exposure pathway. Section 3.1.2.3 identifies the remediation goals, which are discussed in EPA's response to PVSC Attachment A Comment 38, above. The RAOs incorporate each of these elements, they need not restate them.

EPA agrees that in appropriate circumstances, RAOs may be achieved by reducing exposure, as well as contaminant levels. The determination as to whether exposure controls are the best method for meeting RAOs is made during the nine criteria evaluation of remedial alternatives.

PVSC Attachment A, Comment 40: *In Section 3.1.2.5 the FS also mis-characterizes as a "regulatory goal" the NCP's listing of restoration of ground water to beneficial uses as a program expectation. As stated in the NCP, the program expectations are used in developing remedial action objectives. 40 CFR §300.430(a)(l)(iii). But EPA's general expectation to restore ground waters to their beneficial uses does not supersede the requirements of the NCP for the development of proper remediation goals and remedial action objectives. See, National Remedy Review Board advisory letter re Jack's Creek Site, September 6, 1996. "The fact that a proposed remedy may be consistent with the expectations does not constitute sufficient grounds for the selection of that remedial alternative." NCP, Preamble, 55 Fed. Reg. 8702. For this interim RI/FS, this program expectation has, appropriately, not even been used in developing remedial action alternatives, none of which attempt to restore ground water to beneficial uses.*

EPA's Response: This comment refers to EPA's quotation of Section 300.430(a)(1)(iii)(F) of the NCP, which states that EPA expects to "return usable ground waters to their beneficial uses wherever practicable, within a time frame that is reasonable" or if restoration is deemed impracticable, to "prevent further migration of the plume, prevent exposure to the contaminated ground water, and evaluate further risk reduction." The reference to this expectation in Section 3.1.2.5 of the FS helps place the RAOs in context with the general goals, management principles and expectations articulated in the NCP. The preamble to the NCP provides that these expectations "should be considered when making site-specific determinations of the maximum extent to which permanent solutions and treatment can be practicably utilized in a cost-effective manner."

55 Fed.Reg. 8701. EPA has used the quoted expectation as guidance, not as a basis for selecting the remedy.

PVSC Attachment A, Comment 41: *EPA's RAOs are inappropriate. The Statement of Work authorized the PVSC to develop RAOs pursuant to the NCP. The preamble to the 1990 NCP provides that "remedial action objectives aimed at protecting human health and the environment should specify: (1) The contaminants of concern, (2) exposure routes and receptors, and (3) an acceptable contaminant level or range of levels for each exposure medium. Remedial action objectives include both a contaminant and an exposure route recognizing that protectiveness may be achieved by reducing exposure as well as reducing contaminant levels." 55 Fed. Reg. 8712-13. EPA has failed to recognize the existing limitations on exposure pathways in the PVOU. EPA's RAOs do not specify accurate exposure pathways.*

EPA's Response: See EPA's responses to PVSC Attachment A Comment 39 and City Comment IE1.

PVSC Attachment A, Comment 42: *Section 3.1.2.4 - MCLs are applicable "at the tap." MCLs are also often considered relevant for ground water that is a current or potential source of drinking water. However, MCLs are not appropriate for the PVOU for several reasons. First, the regulated medium for MCLs ("piped drinking water") and the affected medium at the site (ground water) are different. Similarly, the place regulated (service connections to a public water system) is much different from the place affected in the PVOU (in-situ ground water). Further, MCLs are not appropriate because much of the impacted ground water in the PVOU is unsuitable for direct drinking water use due to elevated levels of nitrates and TDS. EPA's CERCLA Compliance With Other Laws Manual (OSWER Dir. 9234.1-01, Aug 1988, p.1-5) recognizes that "MCLs are generally not appropriate where ground water is not potentially drinkable due to widespread naturally occurring contamination." Manual at p. 1-69. If MCLs for VOCs were deemed relevant and appropriate for the PVOU, then much of the in-situ water would still exceed acceptable drinking water standards for nitrates and TDS. The Manual also recognizes that "MCLs are generally not appropriate for site-specific circumstances where a well would never be placed and ground water would thus never be consumed." Id. Similarly, MCLs are also not appropriate where a regulatory system exists that prevents the extraction and distribution of untreated drinking water. This is precisely the case in the PVOU. The strict access restrictions established by the adjudications and the implementing rules of the Watermaster prevent the unauthorized extraction and use of the ground water.*

EPA's Response: MCLs (and non-zero MCLGs) are applicable or relevant and appropriate (ARARs) for ground water that is extracted and used for domestic, municipal, industrial or agricultural purposes or discharged into the environment. Since this is an interim remedial action, EPA has not established final chemical-specific cleanup standards for contaminated in-situ ground water. However, MCLs and non-zero MCLGs are also relevant and appropriate for uncontaminated ground water that is that is located downgradient from the remedial action facilities that are expected to contain contamination in the intermediate zone (See *CERCLA Compliance with Other Laws Manual, Part I (Interim Final),* OSWER Directive 9234.1-01 (USEPA 1988), p. 1-8).

The concentrations of nitrates and TDS in the ground water do not affect the use of MCLs (and non-zero MCLGs) as cleanup standards for ground water that is extracted and used or discharged by this remedial action. See the response to PVSC Attachment A comment 4.

EPA does not agree that MCLs and non-zero MCLGs are inappropriate as treatment and containment standards for sources of drinking water simply because state and federal law prohibits the service of contaminated water. This is essentially a circular argument which proposes that it is not necessary to clean up the contaminated ground water under CERCLA because water purveyors, who have the right to use the water but did not cause the contamination, are required to remove the contaminants if they choose to exercise their water rights. The existence of these regulatory controls and their application to production wells in the PVOU, in fact, demonstrates that MCLs and non-zero MCLGs are relevant and appropriate for the contaminated ground water.

PVSC Attachment A, Comment 43: *The text on page 3-3 introduces the concept of aquifer restoration ("EPA's regulatory goal at all contaminated ground water sites...") and mass removal ("The remedial objectives do include "mass removal" as a secondary objective"). This, to the PVSC's knowledge, is the first time EPA has ever mentioned mass removal for this OU. EPA had previously agreed that mass removal was not a goal of the interim remedy.*

EPA's Response: EPA is required to develop interim remedial action alternatives that are consistent with the expected final remedial action (40 C.F.R. § 300.430(a)(1)(ii)(B)). VOC mass removal is identified as a "secondary objective" because containment remedies that accelerate ground water restoration are most consistent with the objectives that EPA expects to evaluate for a final remedial action. Mass removal also satisfies one of the NCP's nine remedial alternative evaluation criteria (reduction of toxicity, mobility or volume through treatment).

PVSC Attachment A, Comment 44: *Section 3.1.3 - Reasons Not to Delay Action - This is a new section added by EPA. EPA states that delaying action would increase the potential for human exposure. Assuming that a delay in action would increase the potential for human exposure assumes that there is current exposure, which is incorrect. There is no real current or future threat to human health from the VOCs in ground water in the PVOU. EPA's assertion is inconsistent with existing restrictions on water use (e.g, the Safe Drinking Water Act and the Watermaster system). In other areas, where unrestricted access to ground water exists, this statement might be more appropriate. The statement also ignores the contaminant transport modelling in Appendix A, which shows no substantial migration of contaminants under a variety of assumptions. If the additional modelling that was omitted is considered, it is apparent that action (i.e., migration control) does not significantly change either the extent or concentration of contaminants in the PVOU as compared with inaction. This statement also fails to consider the non-potability of ground water in the PVOU due to TDS and nitrates, which have deterred its use for other than irrigation.*

EPA's Response: EPA has addressed the issue of exposure pathways and the potability of ground water in its responses to City Comment IE1, Goe Comment I, PVSC Comment 4 and PVSC Attachment A Comments 4, 32 and 42. EPA does not believe that the contaminant transport modelling omitted from the final FS demonstrates that migration is not occurring,

especially in light of ground water data which provides more direct evidence of contaminant migration.

PVSC Attachment A, Comment 45: *EPA states that delaying action will increase the burden of responding to the contamination on water purveyors. This statement is unsupported by the RI. This statement is contradicted by data, referenced in Section 1.4.2.1 of PVSC's FS but omitted here, that show that wellhead treatment costs will not increase in the absence of an EPA-imposed pump and treat remedy. In any event, the shifting of burdens is not an appropriate consideration when determining whether action ought to be taken under CERCLA. Allocation of burdens should not be confused with threats to human health and the environment. In contrast, after action is determined to be necessary at a site, EPA may appropriately consider imposing the burden of action on responsible parties. In other words, the maxim "let the polluter pay" is not itself a reason for a response, but is a reason for allocating the burden of an otherwise appropriate response.*

EPA's Response: The data shows that without containment, VOCs are expected to continue migrating into the B7 Well Field Area. See EPA's response to PVSC Attachment A Comment 44, above. EPA has decided to take action in the PVOU because of contaminant migration, not because water purveyors are currently paying for ground-water treatment.

PVSC Attachment A, Comment 46: *EPA states that delaying action will increase the likelihood for contaminant concentrations to increase in production wells, resulting in the purveyors responding with actions inconsistent with long-term remediation goals. These statements are inconsistent with collected data and analysis, assume San Gabriel Valley Water Company and Suburban Water Systems will not comply with Watermaster Rule 28, and, as such, is misleading to the public and water community. It should also be noted that no long-term remediation goals have been established.*

EPA's Response: See EPA's response to PVSC Attachment A Comment 44. Watermaster Rule 28 provides that water purveyors must obtain Watermaster approval to locate, modify and operate production wells, so that ground water contamination is not exacerbated. Rule 28 does not require that production wells in the San Gabriel Valley be operated to maximize ground-water containment or cleanup objectives. It also does not guarantee that the San Gabriel Valley Water Company and Suburban Water Systems would not abandon some or all of the B7 wells if contaminant concentrations or operating costs increased.

PVSC Attachment A, Comment 47: *EPA states that delaying action will increase the extent of contamination and consequently increase the cost, difficulty, and time required to contain contamination or restore the aquifer. The RI data and the modelling do not support this statement. The wording is objectionable because it assumes continued migration (expansion of the plume), when it has not been demonstrated that this is occurring. Remaining and omitted text in Section 1.4.3.5 demonstrates that the sorbed phase may well act as a mass sink, due to higher adsorption rates compared with desorption rates, which is the opposite of what is stated here by EPA. This statement also assumes that a final RI/FS will lead to a ROD that calls for containment or restoration of the aquifer, which is an unwarranted assumption.*

EPA's Response: Data collected to date indicate that contamination is migrating therefore delaying the action will increase the extent of contamination and consequently increase costs, difficulty, and time required to contain contamination. EPA expects that it will eventually evaluate the need for a final remedial action to restore PVOU ground water. See 40 C.F.R. § 300.430(1)(a)(iii)(F). Whether or not an action is ultimately taken to achieve ground-water restoration, EPA should evaluate interim actions alternatives for their consistency with anticipated final remedial action objectives. 40 C.F.R. § 300.430(1)(a)(ii).

PVSC Attachment A, Comment 48: *References to Figures 3-1 and 3-2 remain in the text, despite the figures having been removed.*

EPA's Response: Comment noted, the Figures are found in the draft FS prepared by CDM (July 1996).

PVSC Attachment A, Comment 49: *Section 3.4.1 - EPA's FS re-designates as "Institutional Controls" what the PVSC's FS called "Control Mechanisms." The change in nomenclature seems to have affected the substance of the section. PVSC's FS treated "Control Mechanisms" as a broad category of existing as well as potential future processes and activities. PVSC believes that it is consistent with the Superfund Administrative Reforms to identify existing control mechanisms, including both natural processes and institutional ones, as part of performing a realistic appraisal of background conditions. EPA's description of "Institutional Controls" omits existing processes, such as natural attenuation of contaminants. It also omits reference to many existing governmental and societal controls that are part of the background conditions at the site. While such background conditions are not necessarily appropriate for discussion in the FS section dealing with Technologies and Process Options, they must be recognized at some point in the RI/FS process. The FS, like the BRA, for example, implicitly recognizes some social and legal background conditions (e.g., it implicitly assumes that local sanitation ordinances, NPDES and RCRA requirements will be observed), yet assumes that SDWA requirements and Watermaster use restrictions will not be observed. The unexplained use of different assumptions is arbitrary.*

EPA's Response: EPA disagrees. Institutional controls are not "background conditions." EPA has discussed institutional controls and natural attenuation in the appropriate sections of the FS.

PVSC Attachment A, Comment 50: *Section 3.4.3 - EPA deleted PVSC's discussion on practicality of aquifer restoration, particularly in a fine-grained aquifer. Although EPA states that aquifer restoration is an ultimate goal, any attempt to restore the Puente Valley aquifers to pristine conditions would be impractical and fiscally irresponsible. Consequently, PVSC's discussion should be restored so the public is not misled into thinking EPA or any agency will pursue aquifer restoration.*

EPA's Response: The deleted text contained a short discussion about the difficulties of aquifer restoration under circumstances that might be relevant to the PVOU. EPA will consider the practicality of restoring the aquifer when EPA evaluates final remedial action alternatives. There is no basis, and no need at this time, to conclude that aquifer restoration is "impractical or fiscally irresponsible."

PVSC Attachment A, Comment 51: *Table 3-1 (General Response Actions) was edited to substitute Institutional Controls for Governmental Controls and Judicially Established and Enforceable Use Restrictions. Non-CERCLA actions were not included in this. The description of the "No Action" alternative does not represent realistic background conditions in the absence of CERCLA action. A realistic description should recognize that established functions of local, state and federal government will continue. Otherwise CERCLA remedial action alternatives must include measures to "CERCLAtize" such basic functions. For example, unless such functions are recognized in the "No Action" description, CERCLA action must include deputizing a police force to protect property used in response actions, must order the maintenance of roads and utilities appurtenant to the response action, must order all inhabitants of the OU to obey local health and safety ordinances (violation of which would be inconsistent with the CERCLA response), and must order state and perhaps even other EPA divisions to enforce NPDES and RCRA requirements. Proper implementation of Superfund Administrative Reforms is impossible unless the "No Action" alternative recognizes realistic background conditions. In the PVOU, such conditions include Watermaster use restrictions on ground water and SDWA requirements.*

EPA's Response: See EPA's responses to Goe Comment I and PVSC Attachment A, Comment 4. EPA recognizes the operation of institutional controls, they simply are not "background conditions for the purpose of measuring the effect of remedial alternatives against the No-Action alternative.

PVSC Attachment A, Comment 52: *Table 3-2 - This table uses deficient RAOs to perform initial screening of remedial technology, but it may be a harmless error in view of the retained options. However, it improperly attributes responsibility for maintaining existing "institutional controls" to the PVSC. The referenced mechanisms are part of existing background conditions that should be recognized in the "No Action" alternative.*

EPA's Response: See EPA's response to PVSC Attachment A Comment 39. EPA agrees that the PVSC cannot control implementation of the institutional controls identified in the FS.

PVSC Attachment A, Comment 53: *Section 4.1.1.1.1 - EPA states the RAOs differently than in Section 3. In Section 3 surface waters are deleted, but they are included here.*

EPA's Response: Comment noted. EPA did not find that VOCs in PVOU surface waters posed a risk to human health.

PVSC Attachment A, Comment 54: *Section 4.1.1.2.1 - This section recognizes the containment of the B7 wellfield, which is inconsistent with other sections of the FS that fail to recognize the containment benefits of these wells, but EPA states that there is no assurance that the B7 wellfield will continue to operate. EPA's assertion that the B7 wellfield may cease to operate is very unlikely given the following: 1) the water quality data over the past decade and contaminant transport analysis do not indicate that VOC concentrations will increase to concentrations that can not be managed with the existing treatment and blending system; 2) the local water demand is not expected to decline; and, 3) Watermaster Rule 28 which precludes relocating a well to a "clean" area.*

The current pumping at the B7 wellfield is part of the background conditions in the PVOU. However, the FS does not recognize it as such. Instead, the FS states that "because there is no assurance that the production wells will continue to pump into the future to provide containment over the life of the CERCLA remedy, this FS does not consider the B7 wells to be a potential component of the CERCLA remedy." The FS states that the current pumping could be used as a part of a remedy if it is assured by the PVSC. There is no basis for the FS to assume that pumping of production wells might not continue for the duration of this interim response. No local planning data or projections of consumption needs are cited to support the assumption.

There is also no basis for insisting on an assumption of responsibility for continued pumping by PRPs as a condition of recognizing such pumping. It is noted that, in the Pollock OU Site Assessment [EPA, April 25, 1994], EPA recognized the planned restart of wellfield pumping by the Los Angeles Department of Water and Power as a satisfactory element of meeting migration control objectives, without insisting on a guarantee, either of the restart or of the continued pumping, under a CERCLA order or otherwise.

EPA's Response: EPA has consistently recognized that operation of the B7 wells could provide containment in the intermediate zone. For the effect of ground water pumping to be considered appropriate as a means of containing contamination, the B7 wells would need to be part of the CERCLA remedy. This option is left open in the ROD. Unless pumping at these wells is incorporated into the CERCLA remedy, it cannot be assumed that this pumping will continue indefinitely.

The statement in the FS that "this FS does not consider the B7 wells to be a potential component of the CERCLA remedy" might be confusing. For the purpose of assembling and evaluating remedial alternatives, EPA assumed that new extraction and treatment facilities would be installed upgradient from the B7 wells. However, the FS, Proposed Plan and ROD all allow for use of the B7 wells in lieu of new facilities, so long as the B7 wells are part of the CERCLA remedy and they are achieving the necessary containment. If continued pumping of the B7 wells is as certain as the PVSC states, it should not be difficult to obtain the assurances necessary to incorporate the wells into the selected remedy.

PVSC Attachment A, Comment 55: *RWQCB-Led Facility Actions are discussed in section 4.1.1.2.2, but only Carrier, Benchmark, and Monadnock are mentioned as pumping ground water. Facilities such as Ajax, Spectrol, Diversey, Lansco, and other facilities which are considering or actually implementing ground water action are not mentioned. The established benefits of soil vapor extraction and air sparging on the ground water are not recognized.*

EPA's Response: Comment noted. See EPA's responses to City Comment ID and CPC Comment 1.

PVSC Attachment A, Comment 56: *Regarding shallow contamination at the Mouth of the Valley (Section 4.1.1.3.1) EPA states "The extent and migration rate of VOCs in shallow ground water downgradient of the mouth of the valley is not well known. Migration velocities and the*

extent of shallow contamination should be better defined during RD to determine exactly what steps should be taken, if any, to meet RAOs in this area." The data should be collected before a remedy is selected.

EPA's Response: Some of this information has already been collected and shows that shallow contamination at the mouth of Puente Valley is migrating. Further information will be collected during the remedial design.

PVSC Attachment A, Comment 57: *In the second and third bullets of Section 4.1.1.3.1, EPA asserts that vertical migration of VOC's could occur from one zone to another, due to "downward gradient". These statements regarding downward gradient are repeated throughout Sections 4 and 5, and are used to justify intermediate zone pumping and an extensive/costly monitoring program (e.g. see Section 4.1.2.1). However, appropriate caveats, that all existing data support the hydrostratigraphic factors which greatly minimize the potential for such vertical migration, are absent and should be added.*

EPA's Response: See response to PVSC Attachment A Comment 28.

PVSC Attachment A, Comment 58: *EPA states that insufficient data exist on the effectiveness of natural attenuation. Although the leading edge of the plume has not been characterized, contaminant transport modelling indicates that natural attenuation will be effective in meeting the objectives of the PVOU. This should be discussed in this section of the FS.*

EPA's Response: Data collected to date indicate that contaminant migration is occurring and therefore natural attenuation is not containing ground-water contamination.

PVSC Attachment A, Comment 59: *Sections 4.1.1.3.2 and 4.1.1.3.4 - EPA states that contamination may migrate downward from the intermediate aquifer and into the deep aquifer. EPA's statement appears to be based on overly simplistic analysis that looks only at the hydraulic gradient. Water quality data, pumping tests, and contaminant transport modelling indicate that the aquitard below the intermediate aquifer precludes the downward migration of significant quantities of contamination. These sections of the FS should include this interpretation which is based on water quality data and detailed contaminant transport analysis.*

EPA's Response: See response to PVSC Attachment A Comment 28.

PVSC Attachment A, Comment 60: *For intermediate depth extraction at the mouth of the valley, although use of the B7 wellfield is not assumed to be a component of the remedy, it is stated on page 4-5 that "the extraction at the B7 well field itself could be identified as the preferred remedial action [for intermediate zone ground water at mouth of the valley] if continued operation and treatment can be ensured, costs are reasonable, and ongoing monitoring confirms that the well field is effectively meeting RAOs." The PVSC agrees that continued extraction from the B7 wellfield should be the preferred remedial alternative for intermediate zone contamination. There are no production wells and therefore no pathways/receptors upgradient of the B7 wellfield.*

EPA's Response: Comment noted. EPA does not agree that there are no pathways/receptors upgradient of the B7 wellfield.

PVSC Attachment A, Comment 61: *Sections 4.1.1.4 and 4.1.1.5 (Evaluation of Ground water Extraction During Remedial Design and Predesign Investigation, respectively) appear to offer some flexibility on pumping locations, rates, and even the need for pump and treat, depending on the results of a pre-RD investigation. This investigation should be performed before a remedy is selected.*

EPA's Response: Comment noted. See response to City Comment IA.

PVSC Attachment A, Comment 62: *In the third bullet of Section 4.1.1.5, EPA states that "The down gradient extent of this above-MCL contamination in the deep zone needs to be further evaluated." PVSC is not aware of any legitimate justification to chase VOCs in the 5-10 µg/L range.*

EPA's Response: The deep zone is an existing source of drinking water. VOCs in the 5-10 ug/L range may exceed drinking water standards.

PVSC Attachment A, Comment 63: *Section 4.1.2 - Objectives of the monitoring network include work that should actually be part of further data collections (such as delineating the nature and extent of contamination). This work should be performed prior to selection of a remedy. One of EPA's justifications for additional monitoring wells apparently is related to the fact that B7 wellfield extraction is not considered as part of Alternative 2. If operation of these wells was assured, fewer or possibly even no additional monitoring wells might be required.*

EPA's Response: Extraction from the B7 wellfield is considered as an option in Alternative 2. EPA supports early performance of data collection activities, however, does not agree that it is required in order to select a remedy.

PVSC Attachment A, Comment 64: *Section 4.1.2.1 - EPA proposes to install additional mid-valley monitoring wells in the intermediate and deep aquifers. Water quality data and contaminant transport analysis indicate that existing monitoring wells in the mid-valley area are adequate to monitor the intermediate and deep aquifer in that area, particularly since water quality data and contaminant transport modelling indicate that significant migration of contaminants from the intermediate aquifer to the deep aquifer is not expected to occur. Even if mid-valley pumping from the intermediate aquifer is implemented, the existing network of monitoring wells is expected to adequately monitor up- and downgradient conditions.*

EPA's Response: EPA does not agree that existing mid-valley monitoring wells are sufficient.

PVSC Attachment A, Comment 65: *In Section 4.1.3, EPA asserts that "there are several water purveyors in Puente Valley that may be interested in accepting treated water". This statement appears to be without substantiation.*

EPA's Response: At the public meeting for EPA's Proposed Plan several water purveyors stated

their interest in accepting treated water (see transcript of public meeting).

PVSC Attachment A, Comment 66: *Also without substantiation is the statement that the RWQCB will issue a waiver for discharge of water with elevated TDS and nitrates. EPA should also discuss the water rights issues that would have to be resolved for water to be discharged to Puente Creek and ultimately leave the Main San Gabriel Basin. Costing of any alternatives involving discharge of water to San Jose Creek should include water replenishment costs. Also, EPA should discuss what would be required to resolve water rights issues, and the likelihood of the RWQCB issuing a waiver for discharge to San Jose Creek. Whether EPA would oppose or override a waiver should also be disclosed. Costing should have been done assuming no waiver.*

EPA's Response: See EPA's responses to City Comments IC and IF. The FS estimated the costs of nitrate and TDS treatment for the remedial alternatives. EPA addressed the water rights issues in Sections 4.1.3 and 5.6.1 of the FS and Section 9.6.1 of the ROD.

PVSC Attachment A, Comment 67: *Section 4.1.5.4 - EPA states that "... current data suggest that active ground water control in the mid-valley intermediate zone is likely needed...". To the contrary, current water quality data and the contaminant transport modelling suggests that ground water control in the mid-valley intermediate zone is <u>not</u> needed. As discussed above, for the past decade, water quality data for the B7 wellfield indicates that VOC concentrations in the intermediate aquifer are stable or are declining. Also, VOCs are not detected in the deep aquifer that provides water to the B7 wells. The regional aquitard below the intermediate aquifer appears to limit the downward migration of significant quantities of VOCs. This is confirmed with contaminant transport modelling. EPA's assertion is mostly based on an over-simplistic interpretation that if there is a downward vertical gradient, significant vertical contaminant migration will occur. EPA's interpretation should be based on the most likely occurrence of contaminant migration, considering all available data and analyses, not an overly conservative interpretation of selected data and simplified analysis.*

EPA's Response: Active ground-water control in the mid-valley is an element of Alternative 4, which was not chosen as the preferred alternative.

PVSC Attachment A, Comment 68: *EPA's description of No Action (Section 4.2.1) is confusing. It does not consider LARWQCB-led actions, but "Ground water extraction at water supply wells is considered as part of background conditions in the PVOU area...". So, it would appear that pumping of the B7 wellfield is part of No Action, but it cannot be depended upon to be part of an active remedy without being CERCLAtized. This should be clarified.*

It is inconsistent to consider on-going extraction at the production wells without treatment of the extracted ground water as part of the "no action" alternative. The "no action" alternative should recognize the existing situation in the PVOU - absent any intervention by EPA - including production well pumping <u>and</u> wellhead treatment required by state and local agencies. The inclusion of existing treatment and monitoring in the "no action" alternative is consistent with the NCP, which recognizes that the "no action" alternative is "often a 'no further action' alternative" because of existing action at the site. See, 53 Fed Reg. 51394. "The no-action alternative involves leaving the site essentially as it is." This is also consistent with EPA's

approach to site characterization, which is performed at the beginning of the RI. The essential purpose of site characterization is to develop an understanding of the existing features of the site, including the extent to which ground water is used, or is reasonably expected to be used, as a drinking water source. Guidance for Conducting Remedial Investigations and Feasibility Studies Under CERCLA at 3-7, 3-10 (EPA, Oct. 1988).

EPA's Response: As explained in the FS, regional ground water pumping is considered in hydraulic evaluations of ground-water flow because it is an essential and dominant factor affecting the direction and velocity of ground-water movement. As EPA has discussed in its responses to PVSC Comment 1 and PVSC Attachment A Comment 54, the continued operation of these wells in a manner that contains contamination is not assured by CERCLA, by this ROD, or by the parties responsible for implementing the remedy.

Ground-water treatment is not assumed in the No-Action alternative. EPA recognizes that prior cleanup actions may be part of the baseline conditions that are used for evaluating the No-Action alternative during subsequent response actions. No-Action alternatives do not include institutional controls and generally do not assume that voluntary activities by others will necessarily occur in the future.

PVSC Attachment A, Comment 69: *Alternative 2 (Ground water Monitoring) "does not have any extraction, treatment, conveyance, or discharge components." This would appear to exclude B7 pumping. It is unreasonable to exclude operation of the B7 wellfield. Whether or not an agreement is negotiated between the PVSC and the water purveyors, the B7 wellfield will continue to operate.*

EPA's Response: See response to PVSC Attachment A Comment 54.

PVSC Attachment A, Comment 70: *Table 4-1, a new table showing information on B7 wellfield wells, contains numerous typographical errors. For example, ground elevation is shown a "0" for two of the wells, the depths for three wells are incorrect, and the completion date for five of the wells is shown as "1-Jan-01".*

EPA's Response: Comment noted.

PVSC Attachment A, Comment 71: *Tables 4-2 through 4-5 are new or substantially revised tables showing new monitoring wells, existing monitoring wells, components of alternatives, and extraction information on alternatives, respectively. As noted previously, PVSC believes that EPA's proposed monitoring requirements are excessive. There is no explanation of footnote A on Table 4-5, although there is some discussion regarding this (intermediate zone extraction at Mid-Valley) in the text (page 4-13).*

EPA's Response: Comment noted.

PVSC Attachment A, Comment 72: *In the first paragraph of Section 5.1.1, EPA make several statements when describing the "limitations of Alternatives 1 and 2" which are, at best, unsubstantiated. These include alleged increased potential for human exposure; increased costs for*

VOC treatment; future increases in VOC concentrations (EPA has evidently concluded that natural attenuation is not occurring and therefore continued plume migration is occurring, without any data to document this), and increased "time required for... restoration of the aquifer". Aquifer restoration in a site such as the PVOU is generally considered to be technically infeasible. These unfounded statements are part of the basis for EPA's evaluation of the alternatives and yet they are not based on nor supported by the data generated at great expense and over long periods in the EPA-sanctioned RI report. This section also fails to take into consideration relevant existing controls which effectively eliminate exposure pathways. Alternatives 1 and 2 (if defined properly) meet federal drinking water standards because of treatment or other actions required to achieve compliance at the tap. An unstated advantage of Alternatives 1 and 2 is avoidance of the expense of a potentially unnecessary treatment alternative.

EPA's Response: EPA disagrees. The inability of Alternatives 1 and 2 to control contaminant migration is well-documented by the RI/FS and the ROD. EPA did not conclude that natural attenuation is not occurring. Section 1.4.3.5 of the FS states: "Observations in the PVOU . . . suggest that natural attenuation is a factor in limiting the migration of VOCs, both within and out of the mouth of the Puente Valley toward the Main San Gabriel Basin." EPA cannot assume that aquifer restoration is infeasible. See EPA's response to PVSC Attachment A Comment 50. EPA has addressed the issue of institutional controls and exposure pathways in its responses to City Comment IE1, Goe Comment I and PVSC Comments 6 and 13. Compliance with Safe Drinking Water Act regulations is not a CERCLA remedial action.

PVSC Attachment A, Comment 73: *When Alternative 1 is properly characterized, it is apparent that all four alternatives are equally protective of human health and the environment. The migration control alternatives (3 and 4) do not add protection, because they do not interdict existing or probable future pathways for the transmission of an unacceptable level of risk to any sensitive receptors. Furthermore, if one assumes that the FS's "No Action" scenario is valid, Alternatives 3 and 4 are not protective of human health, because they do not prevent access to untreated ground water at random points within the PVOU for domestic consumption. Alternatives 3 and 4 must re-invent the Watermaster system and the SDWA as elements of CERCLA action in order to achieve such protection.*

EPA's Response: Unlike the No-Action alternative, Alternatives 3 and 4 control contaminant migration in the ground water and at the pathway of exposure through production wells in the mouth of Puente Valley. EPA agrees that Alternatives 3 and 4 are not absolutely protective of human health because contaminated ground water will remain in place upgradient from the mouth of Puente Valley. The ROD therefore provides that EPA will reassess the selected remedy every five years. In addition, EPA will evaluate final remedial actions to restore ground-water quality.

PVSC Attachment A, Comment 74: *Section 5.1.2 - EPA states that "Alternatives 1 and 2 ... fail to provide migration control." This is not true if migration control is occurring due to natural attenuation, as contaminant transport modelling suggests. Therefore, it is premature to make this statement. The unwarranted assumption of continued vertical and lateral migration is pervasive in Section 5. Even assuming that migration control is a valid objective and that there*

are actual receptors at risk, placing migration control at mid-valley in the PVOU (as per Alternative 4) would not protect receptors either upgradient or downgradient, because of the multiple, facility-specific sources in the valley. Similarly, migration control at the mouth of the valley (Alternative 3) does not protect anything within the PVOU and would at best be a redundant measure in view of the wellhead treatment and blending that is occurring at the B7 wellfield. Modelling shows that natural attenuation is likely to meet the containment objectives.

EPA's Response: Data collected to date indicate that ground-water contamination is migrating and therefore natural attenuation is not meeting the containment objectives.

PVSC Attachment A, Comment 75: *Although the FS states that increasing VOC concentrations are expected at production wells, this is unsupported. Water quality data and contaminant transport modelling suggest that concentrations in production wells will not increase, and natural attenuation will preclude wells downgradient of the B7 wellfield from becoming impacted.*

EPA's Response: Modelling is a simplification of actual processes and must be interpreted with respect to the assumptions made during the modelling effort. Data collected to date indicate that ground-water contamination is migrating.

PVSC Attachment A, Comment 76: *When describing Alternative 4 on page 5-2, it is stated that this alternative will "remove additional contaminant mass". Mass removal is not previously identified as an RAO and, in fact, is so noted by EPA on p. 5-10. When evaluating cost, a cost per pound of mass removed is calculated and it is stated "Although mass removal is not identified as one of the RAOs for the Puente Valley FS, it is one of the nine evaluation criteria (i.e., reduction in toxicity, mobility, or volume through treatment) and is useful in a cost benefit analysis of alternatives". For this interim FS, mass removal or restoration of the aquifer to MCLs is not an appropriate consideration. In any event, restoring the Puente Valley aquifer(s) would be technically impractical and fiscally irresponsible, especially in light of the non-CERCLA contaminants that render its water non-potable.*

EPA's Response: Mass removal is an appropriate consideration under the NCP's nine criteria evaluation process. See 40 C.F.R. § 300.430(e)(9)(iii)(D). The PVSC has not demonstrated that restoration of the PVOU ground water is "technically impractical and fiscally irresponsible."

PVSC Attachment A, Comment 77: *Section 5.2.1- EPA states that neither Alternatives 1 nor 2 ensure that water produced from the B7 wells will be treated to reduce contaminant levels to below MCLs. It is wholly inappropriate to develop and evaluate a monitoring alternative which violates federal and California law (SDWA, Title 22, etc.). Such a scenario precludes legitimate evaluation of the alternative under the NCP. This section also ignores the text in Section 2 which states that since this is an interim remedy there are no ARARs. Alternatives 1 and 2 would comply with ARARs - the FS just artificially ignores the ongoing treatment and other actions which ensure attainment of drinking water standards at the tap. Contrary to the FS, each alternative satisfies any ARARs that might pertain to it. Alternatives 1 and 2, by definition, do not have chemical-specific or action-specific ARARs (other than action-specific ARARs related to monitoring under Alternative 2). Furthermore, since this is an interim FS, attainment of*

MCLs or MCLGs is not an objective, as recognized in Section 2.3.1.1, and for the same reason SWRCB Resolution 92-49 should not be considered. In any event, no alternative seeks to clean up ground water to any particular level.

EPA's statement that "Additional restoration of regionally contaminated areas is not consistent with the RAOs ..." is correct. In fact, any restoration is not consistent with the RAOs.

EPA's Response: Alternatives 1 and 2 do not violate state and federal law. Again, as EPA discussed at length with the PVSC throughout the RI/FS process, the state and federal Safe Drinking Water Acts and Watermaster regulations are institutional controls that may prevent exposure to contaminants, but they are not baseline conditions that EPA should assume under the No-Action scenario. ("Institutional controls, while not actively cleaning up the contamination at the site can control exposure and, therefore, are considered to be limited action alternatives," 55 Fed.Reg. 8710; see also, 40 C.F.R. § 300.430(a)(1)(iii)(D)). It is not that the alternatives violate the law, rather, they do not control the ground-water contamination. See EPA's response to PVSC Comment 13.

The FS does not state that there are no ARARs. It states that since this is an interim remedy, drinking water standards will not be ARARs for aquifer restoration.

PVSC Attachment A, Comment 78: *Section 5.3 - The FS uses deficient RAOs to evaluate long-term effectiveness. Since migration control is erroneously stated as an RAO, it follows that any alternative that is not a form of migration control will not satisfy this criterion. All alternatives are essentially equal in long-term effectiveness when all data are considered and proper RAOs are used.*

EPA's Response: EPA addressed the RAOs issue in its response to PVSC Attachment A, Comment 39. Actions that control contaminant migration are more effective at reducing risk over the long-term than actions that allow for continued migration of contaminants into uncontaminated ground water and production wells.

PVSC Attachment A, Comment 79: *Section 5.3, first paragraph - The in-situ ground water should not be considered a "waste".*

EPA's Response: The contaminants in the ground water are untreated waste.

PVSC Attachment A, Comment 80: *In the second paragraph of Section 5.3.1, EPA states that "particle tracking results suggest Alternatives 1 and 2 do not contain contaminant migration...". This statement is misleading, given that the particle tracking methodology, by definition, does not include the hydrochemical processes that <u>would</u> provide contaminant migration control. This misapplication of particle tracking is used as the basis for rating Alternatives 1 and 2 as "low" in Section 5.3.2. The contaminant transport modelling and the water quality data both show that there is no significant migration of contamination from the shallow aquifer into the intermediate aquifer, nor is there significant migration of contamination from the intermediate aquifer to the deep producing aquifer. A hydraulic gradient by itself is no basis to conclude that there is significant contaminant transport through an aquitard.*

EPA's Response: Particle tracking assumes purely advective flow. Comment noted.

PVSC Attachment A, Comment 81: *Section 5.4.1 - When the No Action alternative is properly characterized, it is apparent that existing background conditions are reducing the toxicity, mobility, and volume of contaminants. Without additional contamination being added to the system, natural attenuation will reduce the mobility and volume of contamination. Furthermore, facility-specific actions, volatilization of VOCs in ground water that discharges to San Jose Creek, and pumping of the B7 wellfield are removing contamination from the system. Again, EPA's evaluation of alternatives in the FS is contrary to the results of contaminant transport modelling and reasonable interpretation of water quality data.*

EPA's Response: See responses to CPC Comment 1, Goe Comments I and II, and PVSC Attachment A Comments 4, 31, and 72.

PVSC Attachment A, Comment 82: *The analysis which compares mass removal in Alternatives 1 and 2 versus that achieved in Alternatives 3 and 4 is incorrect. EPA calculates the mass removal by remedial extraction wells assuming 1995 VOC concentrations remain constant for 30 years. These mass removal calculations overestimate the mass removal by not accounting for the likelihood that VOC concentrations would likely decrease over the next 30 years, especially given the relatively efficient mass removal attained by facility-specific actions. Any attempt to perform a mass removal/cost benefit analysis should appropriately consider and include source control actions. A review of partitioning coefficients for VOCs demonstrates that over 90% of the VOC mass is in the vadose zone, and that removal of mass from this zone is both more technically feasible and cost effective than removal of VOC mass from ground water. At least one industrial facility in the PVOU has already removed more VOC mass with an SVE system than has been estimated for either Alternative 3 or Alternative 4. Since adsorption is occurring and is known to permanently remove mass from ground water systems, then a reduction in mobility and toxicity is occurring with Alternatives 1 and 2.*

The criterion of reduction of toxicity, mobility, or volume can only be properly used to compare alternatives in light of the impact of such reduction (or lack thereof) on the achievement of RAOs. The deficient RAOs of the FS preclude proper weighing of this criterion.

EPA's Response: The mass removal calculations are included only for comparative purposes, and are not intended to document absolute removal quantities. The FS notes and supports facility-specific remediation of contamination in both the unsaturated and shallow saturated zones.

PVSC Attachment A, Comment 83: *Section 5.5.2 - All alternatives are essentially equal in short-term effectiveness. It is illogical to rank Alternative 1 low in this criterion because it has no active element. If all alternatives are ranked for short-term effectiveness in light of achievement of proper RAOs, then all alternatives are also equal.*

EPA's Response: In the ROD, Alternative 1 is not evaluated against the short-term effectiveness criterion. Because the alternatives are not the same, it is illogical that all alternatives should

receive the same ranking with respect to this evaluation criterion.

PVSC Attachment A, Comment 84: *Section 5.6.1 - Alternative 1 is properly not ranked for the criterion of implementability. Alternative 2 is properly ranked higher than alternatives 3 and 4. This section also deals with implementability issues surrounding water rights and discharge options. The analysis should have conservatively recognized that these may be significant impediments, rather than the EPA assumption that the issues can be resolved.*

EPA's Response: In conversations with the Watermaster, the issues surrounding water rights have been resolved. The PVSC, RWQCB and EPA identified a process for addressing the issues surrounding discharge options. On September 14, 1998, the RWQCB approved a resolution approving EPA's Proposed Plan thereby resolving issues surrounding discharge of treated ground water.

PVSC Attachment A, Comment 85: *Section 5.7 - Given the substantial equality of all alternatives on other criteria, when properly applied, it is apparent that Alternative 1 is the most cost-effective alternative for this interim FS.*

EPA's Response: Alternative 1 is the most inexpensive alternative; it is not the most cost-effective because it does not meet EPA's remedial action alternatives, protect human health and the environment, comply with ARARs, or represent the best balance of the other CERCLA evaluation criteria.

PVSC Attachment A, Comment 86: *Section 5.7.2 - The analysis considers mass removal to be one of the nine CERCLA evaluation criteria, equating it with reduction in "toxicity, mobility or volume". This analysis ignores natural attenuation as a mechanism to reduce toxicity and mobility.*

EPA's Response: EPA recognizes that natural attenuation may limit the migration of VOCs and states so in the FS. Not enough information has been collected to demonstrate significant reduction of toxicity and mobility as a result of natural attenuation processes.

PVSC Attachment A, Comment 87: *Table 5-2 shows mass removed over 30 years. EPA's estimations appear to be assuming the upper end of the range of existing concentration values for each area, and also assuming that concentrations will remain constant for 30 years. Neither assumption is valid.*

EPA's Response: See response to PVSC Attachment A Comment 82.

PVSC Attachment A, Comment 88: *In Table 5-6 when alternative costs are compared, it is assumed that water is discharged to San Jose Creek with VOC treatment only, so costs for treatment of nitrate and TDS are omitted. The present worth and $/lb removed are almost double if RO treatment is needed. Cost comparisons should not assume that treatment for TDS and nitrates will not be required, in view of the statement in Section 4.2.3.3 that such treatment "would probably be required." While PVSC does not necessarily concur that such treatment should be required, this statement in the FS requires a corresponding cost estimate in Section 5.*

If alternatives involving the discharge of water to San Jose Creek are costed, the costs should include replenishment costs due to the water not being used beneficially within the San Gabriel Basin. Lastly, the comparison of Alternatives 3 and 4 in Table 5-7 is misleading, as it does not compare the mass removal values to the total mass in the subsurface.
EPA's Response: See EPA's responses to City Comments IC and IF.

Appendix A

PVSC Attachment A, Comment 89: *The references to Well MW6-65 in the last paragraph on page A2-7 are apparently in error. EPA must be referring to Well MW6-55.*

EPA's Response: Comment noted.

PVSC Attachment A, Comment 90: *There are significant differences in both Sections 5 and 6 of Appendix A of the EPA FS from those in the original FS, as discussed below.*

EPA's Response: Comment noted.

PVSC Attachment A, Comment 91: *Section A.5 - The original Section A.5 included a full discussion of the Particle Tracking simulations including an assessment of how the results were in agreement with field observations, and how the model's results supported the conceptual model, and the postulated contaminant migration pathways. The text addressed how the model's behavior and results were consistent with the observed distribution of heads and contaminant at the various screens at MW6-2, 6-3, 6-4 and 6-5. The original text also provided justification for the results and an assessment of how contaminants might continue to migrate in the shallow, intermediate (663) and deep aquifer zones in the future.*

None of these interpretations of the model's results are included in the EPA version of Appendix A.5. The revised text is titled "Particle Tracking Sensitivity Analysis" but it only compares the results from the steady state and transient simulations - it does not present any real "sensitivity" analysis as the term is normally used. Comparing particle (plume) capture from 12-year transient simulations to 100-year containment under steady state conditions does little for the typical reader, and is no use in the assessment of selected alternatives. The model as originally applied provided far more insight into plume migration in the Puente Valley OU.

PVSC's Section A.5 provided a much more cogent assessment of how the overall Puente Valley hydrogeological system worked, and how the observed distribution of contaminant could be explained. It made clear what the primary migratory pathways were, and how future plume movement might occur, or be controlled. It provided the basis on which a logical future decision could be based. PVSC is concerned that the absence of most of the text assessing the plume migration characteristics restricts key information from other agencies and the public reviewing the FS.

EPA's Response: EPA disagrees. PVSC's text and other related documents are available to other agencies and the public in the Administrative Record
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PVSC Attachment A, Comment 92: *Section A.6 - EPA's FS omits much of the PVSC FS's Section A.6 (Contaminant Transport Modelling), and replaces it with particle tracking presented in Appendix B. The contaminant transport modelling conducted by the PVSC, which has been accepted by EPA and is included in part of this FS, is much more accurate in predicting contaminant fate and transport than the overly simplistic particle tracking used by EPA. The use of particle tracking by EPA, although useful for estimating ground water flow and well capture, can significantly overstate contaminant migration. A comparison of EPA's particle tracking results to current water quality data and the results of PVSC's contaminant transport modelling indicates that EPA has substantially overestimated the threat of uncontrolled contaminant transport in Puente Valley (i.e., both at mid-valley and at the mouth of the valley). The 100-year time horizon used for EPA's particle tracking analysis is extreme and unwarranted for this interim FS.*

EPA's Response: As explained in the FS, simulation of contaminant transport requires numerous assumptions on a wide variety of variable for which there are few data if any data available. Contaminant transport simulations are also highly dependent on the geometry of the numerical model, which is a significant simplification of the natural system. As shown in the sensitivity analysis, even minor changes in assumed parameters greatly affects the results of the contaminant transport simulations. Particle tracking is more simplistic. The FS uses particle tracking analyses simply as a method of comparing alternatives and demonstrating well capture. No implication is made regarding the actual effects of contaminant migration.

PVSC Attachment A, Comment 93: *This section has been reduced in scope to only address the two Alternatives considered by EPA. The reduction in number of Alternatives is consistent with EPA's different approach to Alternatives considered, but it does remove all the insight gained from considering other alternatives. Deleting all evaluations of these other alternatives significantly reduces the knowledge gained from the simulation studies.*

EPA's Response: EPA considered the information in this section in preparing the Final FS. This information is contained in the Draft FS which is part of the Administrative Record.

PVSC Attachment A, Comment 94: *As in Section A.5, the section dealing with migratory pathways and summary of how the modelling results are consistent with field observations has been deleted.*

EPA's Response: See prior response.

PVSC Attachment A, Comment 95: *The discussion of mass removal which could be attained by alternatives has also been deleted. There are tables reflecting the initial mass in the system, and the mass added during the 30-year simulation period. There are no tables, however, indicating mass removed from the system (even by facility-specific pumping such as BDP/Carrier, or discharging to San Jose Creek) during that period of time. The deletion of these two important conclusions from the section substantially weakens the technical content of the section.*

EPA's Response: See response to PVSC Attachment A Comment 93.

PVSC Attachment A, Comment 96: *Most of the technical insight gained during the PVSC's modelling studies and presented in the original Appendix A.6 has been inappropriately deleted from the EPA version.*
EPA's Response: See response to PVSC Attachment A Comment 93.

PVSC Attachment A, Comment 97: *Other specific examples of text changes include Section A.6.5, second paragraph, where PVSC had originally indicated that ... "these aquifer zones are minimally aerobic and not conducive to anaerobic dechlorination...". The revised text deletes the minimally, and implies that the aquifers are aerobic. This is misleading.*

EPA's Response: See EPA response to PVSC Attachment A Comment 28.

PVSC Attachment A, Comment 98: *Later in Section A.5.6, the original PVSC text included a discussion on how the selected retardation factors were consistent with field observations of plume migration times. All of this text supporting the selected parameters has been deleted from EPA's document, and weakens the technical basis for the transport simulations.*

EPA's Response: See EPA response to PVSC Attachment A Comment 93.

PVSC Attachment A, Comment 99: *In PVSC's Section A.6.7.1 PCE Migration, a bullet discussion addressed the downgradient impact of a DNAPL source in the vicinity of MW6-4/6-5. This bullet was inappropriately deleted in total in the EPA document.*

EPA's Response: See EPA response to PVSC Attachment A Comment 28.

Appendix B

PVSC Attachment A, Comment 100: *Regarding Figures B-20 and B-21 referenced in Section B.3.2 for the simulation of Alternative 2, these figures suggest that the B7 wellfield is operational. Previous descriptions of Alternative 2 appear to exclude B7 wellfield pumping.*

EPA's Response: Alternative 2 does include the B7 wellfield pumping.

PVSC Attachment A, Comment 101: *Figures B-28, B-29, and B-30 incorrectly refer to Alternative 6 rather than Alternative 4.*

EPA's Response: EPA agrees.